

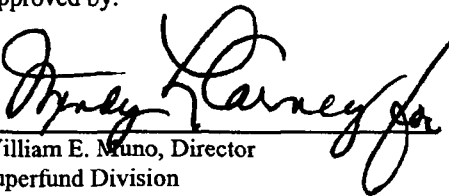


**Five-Year Review Report**  
**Second Five-Year Review Report**  
**for**  
**Republic Steel Quarry Site**  
**Elyria**  
**Lorain County, Ohio**  
**June 2003**

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6/27/03

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# Five-Year Review Report

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## List of Acronyms

ABN	Acid-extractable, Base-Neutral - a type of analysis that defines these organic compounds. Also referred to as semivolatile organic compounds (SVOCs)
AOC	Administrative Order by Consent
ATSDR	Agency for Toxic Substances and Disease Registry
AWQC	Ambient Water Quality Criteria
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
City	City of Elyria
CFR	Code of Federal Regulations
cPAH or cPNA	Carcinogenic Polynuclear Aromatic Hydrocarbon
EPA	United States Environmental Protection Agency
ESAT	Environmental Sampling and Analysis Team (U.S. EPA contract)
ESD	Explanation of Significant Differences
FCOR	Final Closeout Report - documents completion of Remedial Action
FIT	Field Investigation Team (U.S. EPA contract)
FR	Federal Register
FS	Feasibility Study
FY	Fiscal Year
GPM	Gallons Per Minute
HRS	Hazard Ranking System
IRIS	Integrated Risk Information System
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
MSL	Mean Sea Level
NCP	National Contingency Plan
ncPAH or ncPNA	Non carcinogenic Polynuclear Aromatic Hydrocarbon
NPL	National Priorities List
OEPA	Ohio Environmental Protection Agency
O&M	Operation and Maintenance
OSWER	Office of Solid Waste and Emergency Response
PCOR	Preliminary Closeout Report
ppb	parts per billion or ug/L (water) and ug/kg (soil/sediment)
ppm	parts per million, or mg/L (water) or mg/kg (soil/sediment)
PRPs	Potentially Responsible Parties

QAPP	Quality Assurance Project Plan
RA	Remedial Action
RACS	Remedial Action Contracting Strategy
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act of 1976
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager (U.S. EPA)
SARA	Superfund Amendments and Reauthorization Act of 1986
SDWA	Safe Drinking Water Act
SOW	Statement of Work
SSC	State-Superfund Contract
STAT	Superfund Technical Assistance Team (U.S. EPA contract)
SVOC	Semi-Volatile Organic Compound
TAT	Technical Assistance Team (U.S. EPA contract)
TBC	To Be Considered
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
VOC	Volatile Organic Compound

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## Executive Summary

The Republic Steel Quarry (RSQ) Site consists of a five-acre quarry containing water and seven acres of fenced land surrounding the quarry. From 1950 to 1975, the Republic Steel Corporation discharged pickle liquor and rinse water containing sulfuric acid and dissolved metal oxides into the quarry via a ditch. The Site was placed on the National Priorities List (NPL) due to the findings of heavy metals in the groundwater. The Remedial Investigation (RI) conducted between 1986 and 1988 indicated that all contamination caused by past disposal practices were limited to quarry sediments, the pickle liquor discharge ditch and several soil locations around the quarry's edge. Carcinogenic polynuclear aromatic hydrocarbons (cPAHs) and heavy metals posed the greatest potential health risks.

On September 30, 1988, the U.S. Environmental Protection Agency (EPA), with the concurrence of the Ohio Environmental Protection Agency (OEPA), issued the Record of Decision (ROD) which consisted namely of excavating soil contaminated by cPAHs, additional groundwater monitoring, and fish tissue sampling. The Remedial Action (RA) was, conducted under the lead of U.S. EPA, with the support of OEPA, under the authority of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 1980 PL 96-510, 42 U.S.C. 9600, et seq., as amended, commonly known as Superfund. The Site is currently in the Operation and Maintenance (O&M) phase. In June 1998, the first Five-year review indicated the presence of residual risks, which could be effectively mitigated by the inclusion of institutional controls as a component of O&M at the Site. An Explanation of Significant Differences (ESD) was issued in September 2001 for this purpose, and the Site was subsequently deleted from the NPL in November 2002.

The U.S. EPA is conducting this second Five-Year Review of the RA for the RSQ Site, as mandated by Section 121(c) of CERCLA, and amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). The June 2001 guidance, *Comprehensive Five-Year Review Guidance*, OSWER No. 9355.7-03B-P, provides that EPA will conduct reviews no less often than five years as a matter of policy at (1) sites where no hazardous substances remain above levels that allow unlimited use and unrestricted exposure after completion of the RA, but the cleanup levels in the RA will require five or more years to achieve, (2) pre-SARA sites at which the remedy, upon achieving cleanup levels will not allow unlimited use and unrestricted exposure, or (3) a removal-only NPL site where a removal action leaves hazardous substances, pollutants, or contaminants on site above levels that allow for unlimited use and unrestricted exposure and where no remedial action has or will occur.

The trigger for this second five-year review was the completion date (June 26, 1998) of the first five-year review for the Site. This five-year review concluded that the remedy was executed in accordance with the requirements of the Record of Decision (ROD) and ESD.

This five-year review preliminarily concluded that the remedy is protective of human health and the environment in both the short and long term. There are no current exposure pathways to the groundwater contaminants and the quarry sediments under normal circumstances. Further, there are very limited exposure pathways to the quarry water, quarry fish and Site soils due to the institutional controls currently in place at the Site since the Explanation of Significant Differences (ESD) of June 2001. A full protectiveness statement will be made when the remaining Site media, i.e., the quarry surface water, sediments, fish tissue and the Site soils, are sampled in July-August 2003 and the results are evaluated with respect to the appropriate human and ecological health criteria.

The data collected and evaluated thus far for this review (groundwater and Black River surface water) indicate that the remedy is currently functioning according to design and is anticipated to remain functional in the future. Significant public health benefits have been achieved to date by interrupting current and/or potential future exposure pathways such as ingestion and direct contact with contaminated soils, groundwater, quarry fish and surface water.

Operation and maintenance activities have been effective. Evaluation of the effectiveness of the remedy will continue during future five-year reviews until such time that onsite contamination and/or its associated risks are no longer present.

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## Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name ( <i>from WasteLAN</i> ): Republic Steel Quarry Site		
EPA ID ( <i>from WasteLAN</i> ): OHD980903447		
Region: 5	State: OH	City/County: Elyria/Lorain
SITE STATUS		
NPL Status: <input type="checkbox"/> Final <input checked="" type="checkbox"/> Deleted <input type="checkbox"/> Other (specify) _____		
Remediation Status (choose all that apply): <input type="checkbox"/> Under Construction <input checked="" type="checkbox"/> Operating <input type="checkbox"/> Complete		
Multiple OUs?* <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	Construction completion date: 12/31/1992	
Has site been into reuse? <input type="checkbox"/> YES <input checked="" type="checkbox"/> No		
REVIEW STATUS		
Lead agency: <input checked="" type="checkbox"/> EPA <input type="checkbox"/> State <input type="checkbox"/> Tribe <input type="checkbox"/> Other Federal Agency		
Author name: Sheila A. Sullivan		
Author Title: Remedial Project Manager	Author affiliation: U.S. EPA, Region 5	
Review period:** 09/ 11/ 2002 to 06/ 27/ 2002		
Date(s) of site inspection: 03 / 07/ 2003		
Type of review: <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <span><input checked="" type="checkbox"/> Post -SARA    <input type="checkbox"/> Pre-SARA    <input checked="" type="checkbox"/> NPL-Removal only</span> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <span><input type="checkbox"/> Non-NPL Remedial Action Site</span> <span><input type="checkbox"/> NPL State/Tribe-lead</span> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <span><input type="checkbox"/> Regional Discretion</span> </div>		
Review number: <input type="checkbox"/> 1 (first) <input checked="" type="checkbox"/> (second) <input type="checkbox"/> 3 (third) <input type="checkbox"/> Other (specify)		
Triggering action: <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <span><input type="checkbox"/> Actual RA Onsite Construction at OU # ____</span> <span><input type="checkbox"/> Actual RA Start at OU# ____</span> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <span><input type="checkbox"/> Construction Completion</span> <span><input checked="" type="checkbox"/> Previous Five-Year Review Report</span> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <span><input type="checkbox"/> Other (specify) _____</span> </div>		
Triggering action date: ( <i>from WasteLAN</i> ): 06 / 26 /1998		
Due date ( <i>five years after triggering action date</i> ): 06 /26 /2003		

\*["OU" refers to operable unit.]

\*\* [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

**Issues:**

The City of Elyria has not established or maintained records of scheduled operation and maintenance (O&M) activities. These activities involve the inspection of the property perimeter fence line and the posting of warning signs.

The yellow biological growth identified in monitoring well B-4 during the last five-year review is still present. This growth does not appear to pose any threat to human health or the environment.

**Recommendations and Follow-up Actions:**

U.S. EPA will provide the appropriate personnel of the City of Elyria with a template for O&M inspections and record-keeping.

U.S. EPA and OEPA will reassess well B-4 during the summer 2003 five-year review quarry sampling, at which time they will attempt to collect both biological and groundwater samples.

**Protectiveness Statement(s):**

This five-year review preliminarily concluded that the remedy is protective of human health and the environment in both the short and long-term, since there are no current and future exposure pathways to the groundwater contaminants and the quarry sediments under normal circumstances. Further, only limited exposures to the Site soil, quarry pond water and fish would be anticipated, due to the institutional controls in place at the Site since the Explanation of Significant Differences (ESD) of June 2001. Significant public health benefits have been achieved thus far by interrupting current and/or potential future exposure pathways such as ingestion and direct contact with contaminated soils, groundwater, quarry fish and surface water.

The data collected and evaluated thus far for this review included groundwater and Black River surface water. These data indicate that the remedy is currently functioning according to design and is anticipated to remain functional in the future. A full protectiveness statement will be made when the remaining Site media, i.e., the quarry pond surface water, sediments and fish tissue, and the Site soils are sampled in July -August 2003 and the results are evaluated with respect to the appropriate human and ecological health criteria.

O&M has been generally effective. Evaluation of the effectiveness of the remedy will continue during future five-year reviews until such time that onsite contamination and/or its associated risks are no longer present.

**Other Comments:**

None

## Five-Year Review Report

### I. Introduction

The purpose of five-year reviews is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of such reviews are documented in the site-specific Five-year review reports. In addition, Five-year review reports identify issues or deficiencies, if any, found during the review process for the site, and provide recommendations to address or correct them.

U.S. EPA is preparing this five-year review pursuant to CERCLA §121 and the National Contingency Plan (NCP). CERCLA §121 states:

*If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The U.S. EPA interpreted this requirement further in the National Contingency Plan (NCP); 40 CFR §300.430(f)(4)(ii) states:

*If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

The United States Environmental Protection Agency (EPA) Region 5 has conducted a five-year review of the remedial actions implemented at the RSQ Superfund Site in Elyria, Ohio. This review was conducted for this Site from September 2002 through June 2003 by the EPA Remedial Project Manager (RPM), with assistance from the Ohio Environmental Protection Agency (OEPA) Northeast District Office Site Coordinator. This report documents the results of the review. As part of this review, the RPM determined that data collection was necessary to evaluate the current Site status, since regular monitoring is not an aspect of O&M for the Site. Accordingly, in February 2003, the Region 5 Superfund Technical Assistance Team (STAT) contractor, Environmental Design International Inc. (EDI), provided field sampling support under Contract Number 68-S5-01-02 (Task Order #s 0001-0002). This project was the first STAT contract work assignment opened in Region 5. Analytical support was provided through EPA Region 5 Contract Laboratory Program participants: Chemtech Consulting Group of 284 Sheffield Street, Mountainside, NJ 07902 for total and dissolved metals and cyanide; and Clayton Environmental Consultants, Inc. of 22345 Roethel Drive, Novi, MI 48375 for semivolatile organic chemicals (SVOCs). The data validation was conducted through the Region 5 (ESAT) contractor, IIT Research Institute.

This is the second such five-year review for the RSQ Site. The first five-year review was completed on June 26, 1998; the triggering action for that policy review was the RA construction completion as signified by the Final Closeout Report (FCOR) of December 31, 1992, as documented by EPA's WasteLAN database. While the completion date of the first five-year review for the Site was beyond five years since the FCOR, EPA's subsequent policy changes regarding consecutive reviews re-set the due date for this second review to five years from the completion date of the first review. Hence the due date is June 26, 2003. This policy five-year review was specifically activated by the presence of hazardous substances, pollutants and contaminants remaining at the Site above levels that allow for unlimited use and unrestricted exposures. Since the recent implementation of the ESD for the Site, specifying institutional controls, all future five-year reviews may be defined as statutory.

## II. Site Chronology

**Table 1: Chronology of Site Events**

Event	Date
Site Operated as a sandstone quarry.	pre-1950 to 1950
Republic Steel Corp. discharges 200,000 gallons per day of wastewater containing sulfuric acid and metal oxides to the quarry via a discharge ditch.	1950 - 1975
LTV Steel Corp. acquires Republic Steel Corp. The wastewater discharge ditch to the quarry is dammed.	1976
City of Elyria purchases the 12-acre quarry property from LTV Steel Corp.	1977
Republic/LTV Steel Corp. notifies EPA of past disposal practices as per CERCLA, Section 103 (c).	1981
EPA FIT Contractor investigates Site and discovers heavy metal contamination of groundwater and quarry.	Late 1983
Proposed listing of Site to NPL.	October 16, 1984
LTV Steel conducts Site investigation and, together with the City of Elyria, challenges HRS score and NPL Listing.	December 13, 1984
NPL listing is finalized.	June 10, 1986
EPA extends offer to former Site owner (LTV Steel) and current Site owner (City) to conduct RI. Offer rejected based on disagreement with HRS scoring.	April 1986
OEPA sends letter of concurrence to EPA regarding RI/FS SOW and indicates desire to support and assist EPA.	May 9, 1986

**Table 1: Chronology of Site Events**

<b>Event</b>	<b>Date</b>
Remedial Investigation is conducted for RSQ Site.	June 1987 - March 1988
Record of Decision is signed.	September 30, 1988
U.S. EPA and OEPA sign State Superfund Contract.	September 15, 1989
Remedial Design/Remedial Action negotiations occur.	February 23, 1989 - June 8, 1989
Remedial Design occurs.	July 19, 1989 - September 15, 1989
Remedial Action (RA) occurs.	September 21, 1989 - September 25, 1990
Removal Action Memorandum is approved.	September 19, 1989
Removal Actions (as part of the RA) are completed.	February 1990 and June 1990
Construction (Remedial Action) is completed.	September 25, 1990
Final Close-Out Report is signed.	December 31, 1992
EPA signs AOC with City of Elyria for settlement of past costs.	June 20, 1997
First Five-Year Review Site investigation and sampling.	November 1996
First Five-Year Review Report completed.	June 26, 1998
ESD signed for institutional controls and deed restrict.	June 28, 2001
City of Elyria authorizes Declaration of Restrictions by enacting City Ordinance No. 2002-119.	June 21, 2002
Site deleted from the NPL.	November 12, 2002
Second five-year review sampling (groundwater, Black River surface water) is conducted.	February 25-28, 2003
Second five-Year review Site Inspection is conducted.	May 7, 2003
Second five-year review Sampling (quarry water, sediment, fish tissue and soils) to be conducted.	July - August 2003
Next (third) five-year review due.	June 2008



### **III. Background**

#### **Physical Characteristics**

The Republic Steel Quarry (RSQ) Site is located in the City of Elyria, Ohio, and is situated east of West River Road and west of the West Branch of the Black River. The City of Elyria is located southwest of Cleveland in Lora in County in northeastern Ohio, and can be found on the Grafton USGS quadrangle map in Township 6 North, Range 17 West (see Attachment 1, Figure 1). The Site consists of a 4.9-acre water-filled quarry that is surrounded by seven acres of densely vegetated land (see Figures 1-2). A fence now surrounds the Site perimeter: The water depth of the quarry is approximately 60 feet and the sides of the quarry rise to about 25 feet above the water surface. The quarry walls are formed by Berea Sandstone at and below the quarry water level. Above the Berea Sandstone, the walls consists of large vertically stacked sandstone blocks that were used as retaining walls during quarrying operations. Water from the quarry discharges directly into the west branch of the Black River at the outlet depicted in Figure 3. Water in the quarry is in direct contact with the Berea Sandstone Formation.

There are two hydraulic systems in the quarry. The first system is concrete outlet-works equipped with a gate valve located along the east quarry wall where the elevation dips to about 704 feet above mean sea level (MSL). Water is usually draining from the outlet works into the river, but the gate valve can no longer be adjusted. The second system is a 4-inch diameter steel pipe located at the southeastern most corner of the quarry extending down into the water. The approximate locations are shown on Figure 3. This pipe is believed to have been used for with drawing water from the quarry to the Republic Steel plant, rather than being used for discharging the pickle liquor wastes. The pipe system is no longer operational.

#### **Land Resource and Use**

Along the eastern perimeter of the property fence line, vegetation is very dense, consisting of thick brush and small trees. The remaining areas of the quarry perimeter contain mostly grass and small brush. Several larger trees can be found around the Site property and along the river and vegetation is fairly dense over most of the Site.

Although the Site is fenced, it is still accessible through occasional breaches in the fence and in a few areas where the bottom of the fence is 1 to 3 feet above the ground surface. Trespassers are known to enter the Site for recreational use, because debris associated with drinking, fishing, and swimming is evident. Well-worn foot paths lead inward to the quarry pond from gaps in the fence.

The quarry property is well-bounded and isolated by Mussey Avenue to the south, West River Road to the west, and the West Branch of the Black River to the east; hence, there are no residences or small businesses in the immediate areas outside of the property fencing. The closest establishment is the former LTV steel rolling facility located at 525 Mussey Avenue (see Figure 3), to which the quarry property sits directly north of (or behind). The facility is currently owned and operated by Maverick Tube Corporation, which employs about 58 employees over 2 shifts during a five-day business week.

#### **History of Contamination**

The RSQ Site was operated as a sandstone quarry during an unknown period of time prior to 1950. From 1950 to 1975, the Republic Steel Corporation discharged about 200,000 gallons per day (GPD) of

waste pickle liquor and rinse water from steel pickling operations to the quarry. The pickle liquor was chiefly a sulfuric acid-based solution that was used to dissolve oxides, which are a constituent of mill scale. Mill scale develops on the steel during the hot rolling process. The waste pickle liquor, consisting largely of sulfuric acid and dissolved metal oxides, was pumped through an aboveground pipe to a large ditch which flowed into the quarry. In 1976, the discharge ditch leading to the quarry was dammed. The City of Elyria purchased the quarry and the seven surrounding acres of land from Republic Steel Corporation in 1977, with the intention of establishing a municipal park on the property in the future.

In 1981, Republic Steel Corporation notified EPA of its past disposal activities in order to comply with Section 103(c) of CERCLA. In response to this information, a Site investigation was performed by the EPA Field Investigation Team (FIT) contractor in 1983.

### **Initial Response**

The 1983 investigation involved the installation of three monitoring wells, which indicated the presence of heavy metals, such as chromium, arsenic lead and cadmium at greater concentrations in the downgradient wells than in the upgradient wells. The Site was subsequently proposed for the National Priorities List (NPL) on October 15, 1984. Both the City of Elyria and LTV Steel Corporation, which later acquired Republic Steel Corporation challenged the Site's placement on the NPL. LTV Steel Corporation performed its own site investigation in November 1984 using the consultant, IT Corporation. The investigation included analysis of the quarry water and groundwater from EPA monitoring wells. IT concluded that EPA's HRS score was inflated and that if the score were correctly re-computed, it would not be high enough to support the Site's NPL listing. The report further concluded that the quarry had returned to its natural state. EPA's review of the report concluded that its original score was correctly computed and that the Site should remain on the NPL. On January 8, 1986, EPA submitted a proposal to the State of Ohio Clearing House, under the State Intergovernmental Review Process, to conduct an RI/FS for the Site. The OEPA reviewed the RI/FS SOW and on May 9, 1986, indicated its support of the program. The Site listing was finalized in 1986 and later upheld by the court in 1990. A fund lead Remedial Investigation (RI) was initiated in late 1987 by ICF Technology to confirm or refute the presence of site-related environmental and public health hazards.

### **Basis for Taking Action**

The Remedial Investigation (RI), conducted from June 1987 through March 1988, consisted of:

- Profiling of quarry water quality and depth.
- Performance of a magnetometer survey to identify metal objects on the quarry bottom.
- Reconnaissance of quarry surface geology.
- Chemical characterization of surface water from the quarry and the Black River.
- Chemical characterization of sediment from the quarry and Black River.
- Chemical characterization of surface soils adjacent to the quarry.
- Installation of eight monitoring wells and sampling of groundwater.
- Two rounds of groundwater sampling (August 1987 and March 1988).
- Property boundary search.

The following information was known about the contamination of each environmental medium.

## Groundwater

At the RSQ Site, the groundwater was estimated to be free of volatile organic compounds (VOCs). Downgradient from the quarry, the groundwater showed elevated levels of acid-extractable, base-neutral (ABN) organic compounds and inorganic chemicals. The following contaminants were detected during the RI groundwater sampling in September 1989.

Barium	Zinc
Beryllium	Pentachlorophenol
Manganese	Phenol
Chromium	Silver
Copper	Vanadium
Lead	Methylene Chloride
Nickel	Acetone

## Surface Water

No organic compounds in the quarry water were identified as being potentially site-related. Several inorganic compounds were identified as possibly site-related. When compared to upgradient groundwater, all of the inorganic compounds were detected at elevated concentrations with the greatest concentrations observed near the quarry bottom. A comparison of downgradient and upgradient Black River surface water samples indicated that the Site was not adversely affecting the Black River water quality. The following chemicals were detected from the RI surface water sampling in June 1987 and March 1988.

Barium	Manganese
Calcium	Nickel
Iron	Vanadium
Magnesium	Zinc

## Fish Tissue

Elevated concentrations of mercury and manganese were observed in fish tissue samples from the quarry and downstream of the quarry in the Black River, compared to upstream samples. Though elevated, mercury and manganese concentrations were not as high as those predicted by the sediment to fish tissue modeling. Cadmium and copper were suspected in the fish, but had not been measured directly.

## Surface Soil

Before the RA was conducted, results of surface soil samples obtained from areas of the Site that were periodically inundated by quarry water or exposed to waste discharges in the past, indicated that VOCs, semivolatile organic compounds (SVOCs) and inorganic compounds were present above background concentrations. Past disposal activities appeared to have affected the quality of the surface soils at the Site. Semivolatile and inorganic compounds were also detected in a sample of the steel yard soils that were sliding into the quarry. Following the RA, concentrations of SVOCs and inorganic compounds were thought to be above background, but had been mitigated to below the cleanup criterion. The chemicals detected during the surface soil sampling in June 1987 included:

Acetone	Di-n-butylphthalate
Bis(2-ethylhexyl)phthalate	Di-n-octylphthalate
2-Butanone	Manganese

cPAH (cPNA)  
Chromium  
Copper

Mercury  
ncPAH (ncPNA)  
Methylene Chloride

## Sediment

Results of sediment samples collected from the quarry indicated that quarry sediments contained elevated levels of VOCs, SVOCs and inorganic compounds. Volatile organic compounds were detected only in the quarry sediment samples which lay below a water depth greater than 35 feet, while SVOCs and inorganic compounds were detected in both deep and shallow samples. Concentrations of the SVOCs and inorganic compounds in sediment samples collected from deeper water locations were greater than those collected from shallow water locations. The results indicated that past activities have affected quarry sediment quality. The chemicals detected in the quarry sediments collected during the RI in June 1987 were the following:

Acetone	Ethylbenzene
Bis(2-ethylhexyl)phthalate	Mercury
2-Butanone	Methylene Chloride
Butylbenzylphthalate	ncPAH
Copper	Pentachlorophenol
cPAH	Tetrachloroethane
Diethylphthalate	Tin
Di-n-butylphthalate	Toluene
Di-n-octylphthalate	

A comparison of downstream and upstream Black River sediment samples indicated that the Site was not affecting sediments in the Black River.

The RI indicated that all contamination caused by Republic Steel's disposal practices was limited to quarry sediments, the pickle liquor discharge ditch and several soil locations around the quarry's edge. As part of the RI, a baseline risk assessment was performed to evaluate human health risks with respect to carcinogens and noncarcinogens at the Site under various current and future exposure scenarios. The maximum carcinogenic risks were driven by the potential uptake of cPAHs and mercury from the quarry sediment to fish tissue, as modeled. These risks were estimated to be nearly four times over the threshold for significant carcinogenic risk. Under future Site use conditions, the risk was driven by direct contact and incidental ingestion of soil and groundwater. Both the quarry and the Black River, which borders the Site to the east, are used for recreational purposes such as swimming and fishing. Drinking water is currently supplied to all surrounding residents via the City of Elyria municipal water supply system.

A Feasibility Study (FS) was not conducted for this Site because the contaminants exceeding risk-based action levels in the soils were limited in volume and distribution to specific areas or hotspots. The contaminated sediments were confined to the quarry bottom and were not readily accessible to humans, except via the fish consumption pathway. In addition, the groundwater was not being used as a potable water source.

## **IV. Remedial Actions**

### **Remedy Selection**

The Record of Decision (ROD) was issued on September 29, 1988 and prescribed the excavation and removal of combined sediment and soils exceeding an Action Level of 300 ppb for cPAHs. These soils were primarily located in the pickle liquor discharge ditch and the boat ramp areas around the southern edge of the quarry. The ROD also specified that a fish species survey, fish tissue bioassays and groundwater resampling be conducted during a Supplemental Investigation in order to recalculate the risks using actual fish tissue data and more recent groundwater data. Since groundwater at the time was not used as a potable water supply, nor was it expected to be used in the future, the ROD did not include a groundwater treatment component. The contaminated quarry sediments were to be left in place since they lay below the mixing zone and fish were not likely to come in contact with them. EPA further concluded that quarry remediation would likely entrain contaminated sediments in the water, thereby increasing the likelihood of exposure to the contaminants by fish and humans. Since construction was not an element of the selected remedy, the RD phase of the project was minimal and occurred between July 17, 1989 and September 15, 1989.

### **Remedy Implementation**

The Remedial Action (RA) was implemented by EPA in two phases during the time period from September 21, 1989 to September 25, 1990. The first phase focused on resolving the risk issues concerning groundwater and fish tissue that were raised during the RI baseline risk assessment. This involved determining the requirements for the upcoming fish/biota species survey and fish tissue bioassays, and additional groundwater monitoring for the Supplemental Investigation. The second phase involved addressing the contaminated soil and sediments.

Due to time constraints, the collection and analysis of actual fish tissue samples, during the RI was not possible. Instead, the fish tissue concentrations were estimated using a conservative sediment to fish tissue model that incorporated quarry sediment data collected during the RI. According to the exposure conditions in the baseline risk assessment, fish consumed on a regular basis from the quarry posed an unacceptable noncarcinogenic risk to humans due to cPAHs and mercury. Further, the Ambient Water Quality Criteria (AWQC), which are used to define risk-based acceptable surface water concentrations for the protection of aquatic organisms, were exceeded for mercury, manganese and copper in the quarry water.

The subsequent 1990 Supplemental Investigation risk recalculation found that the previous assumptions made during the modeling of mercury and cPAHs concentrations in fish tissue, in lieu of actual data, were too conservative and unreliable. The recalculated maximum carcinogenic and noncarcinogenic risks to humans from consumption of fish tissue, based on fish tissue data obtained during the Supplemental Investigation, were found to fall within the acceptable risk range. Because the risk recalculations confirmed that no unacceptable risks were posed to humans consuming fish from either the quarry or the Black River, EPA did not recommend to the Ohio Department of Health that a fish advisory be issued.

The additional groundwater monitoring was performed because beryllium and bis(2-ethylhexyl) phthalate had been reassigned higher cancer potency factors by EPA since the completion of the RI baseline risk assessment. During the Supplemental Investigation, the risks from groundwater were

recalculated using the semivolatile and inorganic contaminants previously identified in the RI. The carcinogenic and noncarcinogenic groundwater risks respectively increased and exceeded their respective thresholds of significance. There are currently no users of groundwater at the Site or within at least one-half mile of the Site, hence there was no imminent risk presented to humans at the time from groundwater. Further, the groundwater was not expected to be used as a potable water source in the future

EPA performed the second phase of the RA addressing contaminated soil and sediments after the potentially responsible parties (PRPs) declined to perform the cleanup. In August 1989, the Technical Assistance Team (TAT) delineated the extent of soil contamination. The projected excavation volume was 100 cubic yards; however, in February 1990, 150 cubic yards of soil were removed from the boat launch area and pickle liquor discharge ditch (Figure 3). The excavated volume was greater than anticipated due to the fact that the topsoil was slightly thicker than expected; the weather was wet during the removal; and, some contamination had been tracked onto the access roads and had to be removed.

Confirmatory sampling indicated that the cleanup objective, i.e., the total concentration for the four cPAHs present: (benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene and benzo(a)anthracene) does not exceed 300 parts per billion (ppb), had been achieved for the boat launch. The pickle liquor ditch was still contaminated. An additional 40 cubic yards of soil were removed from the ditch in June 1990 in order to achieve the cleanup criterion. Tests showed that the waste was not characteristically hazardous by Extraction Procedure (EP) Toxicity, but the K062 listing remained in effect. The soil was disposed of offsite at Envirosafe Services in Oregon, Ohio, according to Resource Conservation and Recovery Act (RCRA) Land Disposal Restrictions (57 FR 2676). The soil excavation was conducted by the Region 5 Removal program under the authority and funding of the Remedial Program; hence this hybrid cleanup, the first of its kind, was referred to as a "Removal".

### **System Operations/O&M**

The Site has been in the O&M phase since December 31, 1993 when the PCOR was completed. Because the RA chiefly involved a soil removal, there is no formal O&M plan as per the RD SOW. The RSQ Site is currently owned and maintained by the City of Elyria. A State-Superfund Contract (SSC), signed in September 1989 with OEPA, indicates that OEPA will assure all future O&M of the RA for the expected life of the actions. To date, it has not been necessary for the OEPA to directly undertake O&M activity at the RSQ Site because the City of Elyria has assumed this responsibility. The state will be responsible for O&M in any subsequent phase, if necessary. The cost reconciliation and termination of the SSC occurred in October 1998. OEPA has continued to consult with EPA on all actions since the termination of the SSC.

Since the RA consisted mainly of soil excavation, there are no remedial structures or operating treatment systems at the Site. At the recommendation of EPA and OEPA, the City has maintained the fence on an as-needed basis. Maverick Tube Corporation has also maintained the southern property fence line adjacent to its facility.

From November 1996 to June 1998, the first five-year review was conducted at the Site by EPA, with support from OEPA. At that time, EPA used a three-tiered approach for conducting the reviews based on site-specific considerations. A Level II review was warranted because contaminant levels or indices of toxicity had changed, requiring sampling and recalculation of risk. The findings of the five-year review investigation, which involved sampling of all Site media in November 1996, and a

recalculation of Site-related risks, provided the basis for recommending changes to the ROD. The Five-Year Review Report was issued in June 26, 1998.

Based on the first five-year review evaluation, the chemicals that were of concern and subsequently evaluated in the human-health risk recalculation included:

<u>Groundwater</u>	<u>Soil</u>	<u>Surface Water - Quarry</u>	<u>Surface Water - River</u>
Antimony	Arsenic	Copper	Iron
Arsenic	Iron	Iron	Manganese
Beryllium	Thallium	Manganese	
Cadmium		Vanadium	
Iron			
Manganese	<u>Fish - Quarry</u>	<u>Fish - River</u>	
Thallium	Cadmium	Manganese	
	Mercury	Mercury	

The first five-year review risk recalculation indicated that no unacceptable onsite or offsite risks were posed to casual trespassers. This finding is consistent with the results of the 1990 Supplemental Investigation risk recalculation. Thus, while cPAH concentrations in onsite soil exceeded the ROD-designated Action Level of 300 ppb in certain areas of the Site enclosed by the fence, EPA's more recent 1993 provisional guidance for cPAHs indicated that the soil concentrations of cPAHs may pose a lower carcinogenic risk than previously thought. As mentioned, the ROD criterion used a 300 ppb cleanup goal for total cPAHs which was based on a  $1 \times 10^{-6}$  cancer risk from incidental ingestion and dermal absorption from soil. EPA's 1993 guidance: "*Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons*" is the current guidance for risk assessment of cPAHs and, as such, recommends the use of relative potency values and the assumption that the carcinogenicity of individual PAHs is additive; thus the cPAHs should be treated as a group in the risk assessment. Previously, EPA risk assessments assumed that all cPAHs were equipotent to Benzo(a)pyrene (BAP), the most potent carcinogen of the cPAHs. Since then it has been recognized that some PAHs may be less carcinogenic than BAP.

Site conditions at the time of the review indicated that the maximum carcinogenic risk estimate for a trespasser exposed to onsite soils was driven by the potential ingestion of arsenic present in the soil at concentrations below background levels. Regular or habitual use of the quarry via swimming or fish consumption may present unacceptable noncarcinogenic risks. The potential risks from the quarry water were attributable to the presence of iron and manganese near the bottom of the 60-foot water column. It was assumed that exposure to these contaminants via swimming is negligible since swimmers are unlikely to frequent the deep water. The potential noncarcinogenic risk was due to quarry fish consumption and was driven by mercury in the fish tissue.

Under future recreational and residential use, groundwater consumption and soil ingestion would each pose unacceptable risks. Future park patrons (children) would be at risk from soil ingestion due to arsenic and iron. Iron toxicity was not assessed in the previous risk calculations because no toxicity criteria were available at the time and iron is an essential human nutrient. The noncarcinogenic risks attributable to the groundwater ingestion pathway were from antimony, iron, thallium, manganese and arsenic. Arsenic and beryllium presented an unacceptable cumulative carcinogenic risk from the ingestion pathway. The five-year review investigation confirmed the 1990 Supplemental Investigation conclusion

that groundwater must not be made available as a potable water source, since this would present an unacceptable risk to users. Tables providing a comparison of sampling results for the RI, the first five-year review and the second five-year review (groundwater and Black River surface water) are provided in the Data Review portion of Section VI in this report. The Site media that could not be sampled in February 2003 for this second five-year review report, will be provided in FY 2004 as an addendum to this report.

The first five-year review included an ecological risk assessment. The assessment determined that the Black River, including the region located near the quarry discharge outfall, had not been impacted by the RSQ Site and that the Ohio Water Quality Standards were being met. This finding applied to Black River, surface water, sediment, aquatic organisms such as fish and aquatic receptors, including piscivorous birds, and terrestrial organisms inhabiting the vicinity of the Black River.

For aquatic receptors of the quarry, the contaminants of concern in surface water were calcium, cobalt, copper, iron, manganese, silver and vanadium. These levels were detected in the deepest levels of the quarry, indicating the potential for aquatic organisms living at the bottom of the quarry to be adversely impacted. This exposure situation, however, would be limited during warm weather when fish inhabit the upper water layers. The benthic organisms inhabiting the quarry sediments are currently subject to adverse impacts from the sediment contaminants such as the PAHs and pesticides, however, these impacts would be intensified if sediment remediation were to occur, due to the unavoidable resuspension of contaminants. Other aquatic receptors did not show hazard quotients above one. The contaminants of concern for terrestrial receptors were antimony, iron, selenium, thallium and mercury in soil. However, due to many uncertainties concerning metal speciation, bioavailability, and toxicity data for the terrestrial food chain, the risks were believed to be overstated.

The preceding information from the previous five-year review has been used to determine ongoing O&M requirements for the RSQ Site. While there was no formal O&M plan prepared as per the RD activities, the City has some expenditures relating to Site security and maintenance. Table 2 provides a brief listing of O&M costs from 1998 to the present. The costs involve grass and weed mowing which occurs twice per month. Other less regular costs (once per three years) include the installation of ten sets of warning signs, replacement of Site security supplies such as chains, locks and keys, and the repair of the perimeter fence.

**Table 2: Annual System Operations/O&M Costs**

<b>Dates</b>		<b>Total Dollar Cost (Estimated for indicated Period)</b>	<b>Annualized Dollar Cost (Estimated for indicated Period)</b>
<b>From</b>	<b>To</b>		
1998	1999	592.00	593.00
1999	2001	1,208.00	604.00
2001	2003	1,232.00	616.00



## **V. Progress Since the Last Review**

The recommendations of the first five-year review for limiting or preventing exposures to on-site contaminants included restoring the fence to functional condition, posting warning signs, and conducting monthly inspections of the fence, with increased vigilance in warm weather, to detect and repair vandalism to the fence and signs. The Review further recommended that groundwater monitoring be performed during future five-year reviews to determine whether contaminant levels are increasing or decreasing in the groundwater with respect to the MCLs. However, since there are no current or anticipated future exposures to groundwater due to the availability of the Elyria municipal water supply, no risks are posed to human health. The EPA recommended that the City of Elyria enact land use restrictions so that no residential development could occur and that the use of groundwater as a potable water source would be prohibited for current and future commercial/industrial or public purposes. In response to EPA's recommendation, the City of Elyria passed an emergency Resolution of Intent on November 1, 1999 to prohibit certain uses of the Site as a result of the five-year review findings.

Since issuing the first Five-Year Review Report for the Site on June 26, 1998, EPA and the OEPA determined that the 1988 ROD has been protective and minimal exposure to the remaining Site contaminants has occurred. However, the Agencies also felt that the remedy needed to be formally expanded to include institutional control measures. The OEPA further supported the application of enforceable institutional controls in order to facilitate its future O&M responsibilities at the Site. In September 2001, EPA issued an Explanation of Significant Differences (ESD) to the ROD. The ESD specifically set forth the following eight conditions: 1) Restrict property use of the to H-I (Heavy Industrial) uses only; 2) prohibit the use of groundwater as a source of drinking water; 3) require the use of the City of Elyria municipal water supply as the source of potable water for any industrial or commercial development or public use; 4) post warning signs to keep off the quarry Site; 5) maintain the perimeter fence; 6) prohibit fishing, swimming and boating in the quarry; 7) prohibit public access or use of the quarry, its sediments and soil; and, 8) conduct and sufficiently inspect the Site to ensure that the previous controls are complied with. As a formal component of the RA, the implementation of the institutional controls and deed restrictions may require O&M activities. The City of Elyria will continue to assume responsibility for the observance of the institutional controls and deed restrictions as the local authority and Site owner.

EPA worked with the City of Elyria to craft a Declaration of Restrictions for the RSQ Site, which was subsequently passed by the City on June 21, 2002, as authorized by Elyria City Ordinance No. 2002-119. The Declaration institutionalized the eight conditions of the ESD and will run with the land, binding all current and future owners. Should a violation of the ordinance occur, the City and all future owners of the property will be able to take the appropriate enforcement actions (see Attachment 2).

Shortly after completing the ESD, preparations were begun on the NPL site deletion package. Due to time constraints and the lack of controversy associated with the Site, EPA opted to perform a streamlined deletion, wherein the Notice of Intent to Delete (NOID) and Notice of Deletion (NOD) were published concurrently in the Federal Register on September 12, 2002, followed by a 30-day public comment period. The public notice planned for September 12, 2002 did not appear until October 6, 2002 due to funding issues at the end of the fiscal year. The public comment period was extended to November 6, 2002. When no comments were received, the Site was deleted as of November 12, 2002.

The only unresolved issue since the 1998 five-year review involves monitoring well B-4 (see Figure 4). This well was not sampled in November 1996 due to the presence of an unknown gelatinous yellow substance inside the well protective casing and inside and outside of the riser pipe. The substance was odorless and photoionization detectors did not register elevated readings near the substance. The yellow substance was still present during a return visit in February 1997. The substance is biological in nature, such as a yellow slime mold, and does not indicate site-related or any other type of contamination, since yellow slime molds thrive in clean but moist environments. Further, it is unlikely that the material was introduced by trespassers or vandals since all of the well protective casings were secured with padlocks. Well B-4 was found to have its padlock intact in October and November 1996. There were, however, indications that the well had been damaged during the intervening years since the RI and the first five-year review, as evinced by the bent bumper post and cracked concrete near the casing. The damage to the above-ground structures could be related to the yellow substance.

Well B-4 is classified as a background well, and its RI data indicated nothing unusual. Since the well is the most distant from the quarry, lying over 250 feet west of the pond, it is thought to be upgradient and beyond the influence of Site contaminants. During the February 2003 five-year review investigation, B-4 was examined and still found to contain the yellow substance. Hence, it was not sampled, but a new riser cap and lid padlock were placed on the well. EPA is planning to reassess the well and to collect both biological and groundwater samples, if feasible, during the upcoming sampling trip in July-August 2003.

A potential Site-related issue supporting the need for land use restrictions and institutional controls involved the Elyria School District's proposal to expand the senior high school capacity. This would be achieved by either expanding the present facility in the vicinity of the RSQ Site, or by building a completely new facility at another location. The Elyria Board of Education established a broad-based citizen's committee to study the school siting issues and to formulate recommendations to the Board by June 2003, in order for a referendum to be placed on the November ballot. If the school is to be expanded near the Site, a sizeable buffer zone would be required to facilitate ingress and egress from the school. Hence the original concerns regarding public health or safety with respect to the Site are unfounded.

### **Table 3: Actions Taken Since the Last Five -Year Review**

<b>Issues from Previous Review</b>	<b>Recommendations/ Follow-up Actions</b>	<b>Party Responsible</b>	<b>Milestone Date</b>	<b>Action Taken and Outcome</b>	<b>Date of Action</b>
Site security; prohibit use of groundwater; restrict future land uses	Institute regular Site security inspections and repair damage to perimeter fence; post signs around perimeter fence; enact deed restrictions	City of Elyria	As soon as possible	City passed an emergency Resolution of Intent on to prohibit certain uses of the Site	Nov. 1, 1999
September 1988 ROD does not include Institutional controls as part of the remedy	Prepare ESD to include institutional controls as part of the ROD	U.S. EPA	Sept. 28, 2001	U.S. EPA issues ESD which includes eight provisions for Site security and future land use. OEPA concurs	Sept. 28, 2001
City of Elyria needs to enact strict land use controls, groundwater prohibition and site security	U.S. EPA to work with City to ensure that institutional controls and security measures become codified and enforceable	City of Elyria		City adopts Ordinance No. 2002-119 which codifies all land use restrictions and Site security and adopts the eight provisions of the ESD.	June 21, 2002
Site deletion from NPL	Prepare package to delete Site from NPL	U.S. EPA	September, 2002	U.S. EPA completes a direct final deletion of the Site from the NPL. OEPA concurs.	Nov. 12, 2002
Presence of yellow substance in Well B4	Collect a sample each of the yellow substance and the well water. Ship sample for mycological analysis	U.S. EPA	September 2003	To be addressed.	Not Available

## **VI. Five-Year Review Process**

### **Administrative Components**

Members of the OEPA and the City of Elyria were notified of the fact that a second five-year review would be performed at the Site as early, as September 2001, during the time while EPA was preparing the ESD and NPL deletion package. The RSQ Site Five-Year Review Team was led by the EPA Site RPM Sheila Sullivan. Other EPA staff involved contracting specialist Claudea Heise, STAT Contract Project

Manager Cecilia Moore, EPA sampling contractors EDI, and data evaluation contractor IITRI/ESAT. OEPA members included Site Coordinator Joseph Trocchio, and Risk Assessor Sheila Abraham. Several representatives from the City of Elyria also participated. Beginning in August 2002, the Site RPM established the components of the Review, which included:

- Secure Field Support Contractor
- Community Notification
- Field Investigation and Sampling
- Document Review
- Data Review
- Site Inspection/Community Interviews
- Five-Year Review Report Development and Review

Although the five-year review is planned for completion by June 26, 2003, the sampling schedule was extended to September 2003 to optimize the data quality of certain Site media. An addendum containing the analytical results for the remaining media and attendant protectiveness determination will be provided when the data are available.

### **Community Involvement**

Activities to involve the community in the five-year review process were initiated in October 2002 in the form of a notification to the Region 5 Superfund Community Involvement Coordinator (CIC) for the RSQ Site. A notice announcing the initiation of the five-year review process and soliciting Site information and concerns from the community was published in the local newspaper, the Elyria Chronicle Telegram, on January 31, 2003 (see Attachment 3).

Since the notice was published, no community members voiced an interest or concern regarding the Site itself or the five-year review process. The only concern raised related to the Elyria School District's interest in siting a Senior High School facility in proximity to the RSQ Site. The RPM discussed this issue with the school board representatives and was interviewed on this topic by the Elyria Chronicle-Telegram. This issue was followed up on during the community interviews for the current five-year review. There are no other known Site-related community issues or concerns as per the community interviews conducted on May 7, 2003 (see Attachment 4).

### **Document Review**

The five-year review included a review of the relevant documents which included post-RI or supplemental investigation reports, the 1988 ROD, applicable ground water and surface water cleanup standards and risk-based levels to protect human health and aquatic organisms and removal action documents. Also post-RA documents, such as the first five-year review, ESD, NPL deletion notice and applicable agency guidance, particularly for institutional controls. The comprehensive list of documents reviewed is included as Attachment 5.

### **Data Review**

#### **1. Groundwater Monitoring**

Groundwater monitoring was first conducted after the possibility of contamination was raised by

Republic Steel Corporation's disclosure of disposal practices. During the 1983 Site Assessment in which three monitoring wells were installed, EPA detected heavy metals. This was the basis for listing the Site on the NPL. Subsequent groundwater monitoring was conducted in August 1987 and March 1988 at these wells and the five others installed during the RI investigation. The Supplemental Investigation also conducted groundwater monitoring in September 1989 at all eight wells. The initial five-year review in November 1996 included monitoring of seven of the eight wells, due to an obstruction in well B-4. During the February 2003 sampling, the same wells were sampled as in the previous review. To evaluate current groundwater analytical results, monitoring wells B-2 and B-3 were used for establishing the quality of groundwater upgradient of the RSQ Site. Monitoring wells B-1, B-5, B-6, B-7, and B-8 are considered to be downgradient monitoring wells.

A chemical was potentially site-related if it was detected in the groundwater at concentrations greater than five times the concentrations in the water blank, where: 1) A compound was detected in the downgradient monitoring well sample at concentrations greater than two times the maximum concentration in the upgradient monitoring well sample, and 2) A compound was detected at concentrations greater than two times the upgradient concentration in more than one downgradient monitoring well, or 3) A chemical compound was detected in only one monitoring well at concentrations greater than two times the maximum upgradient concentration and was considered to be site-related during the RI. During the previous five-year review, the compounds antimony, arsenic, beryllium, cadmium, iron, manganese and thallium were determined to be Site-related chemicals in the groundwater. When the same criteria were applied to the current five-year review groundwater data, the contaminants arsenic, beryllium, iron, lead, manganese, nickel, silver, thallium, and vanadium were site-related chemicals. The screening confirmed that barium and chromium were not site-related and that antimony and cadmium, previously identified as site-related chemicals, did not qualify based on the recent monitoring data.

To characterize the current nature and extent of contamination for groundwater, the analytical results of downgradient groundwater samples were compared to upgradient monitoring wells; and to MCLs, SMCLs, and OEPA public water standards to determine if exceedances had occurred. During the first five-year review, potential trends were determined by comparing the maximum concentrations of current site-related contaminants to the RI's maximum concentrations for the same site-related compounds to assess whether concentrations had increased or decreased. This comparison was shown graphically for each site-related compound in Figure 4-8 (multiple pages) of the first Five-Year Review Report (June 1998). This practice of trend establishment was built upon for the current five-year review. Site-related contaminants were compared to the previous five-year review maximum concentrations for the Site-related compounds to determine whether the levels had increased or decreased. These summary groundwater data, including the results for current groundwater sampling are summarized in Table 4.

**Table 4: Groundwater Data Summary for Republic Steel Quarry Site**

CHEMICAL	MCL (ug/L)	Range of Detected Concentrations from RI Sampling (Mar/Oct 1988)		Range of Detected Concentrations: 1 <sup>st</sup> Five-Year Review (November 1996)		Range of Detected Concentrations: 2 <sup>nd</sup> Five-Year Review (February 2003)	
		Minimum (ug/L)	Maximum (ug/L)	Minimum (ug/L)	Maximum (ug/L)	Minimum (ug/L)	Maximum (ug/L)
<b>Organics</b>							
Acetone *		NR	55	NA	NA	NA	NA

Benzoic Acid		NR	42	NA	NA	NA	NA
Bis (2-ethylhexyl) phthalate	6	7.1	11	0.7	1	10	55
Caprolactam						2.	78
Di-n-butylphthalate		NR	3.9	ND	ND	ND	ND
Methylene Chloride	5	3	140	NA	NA	NA	NA
Pentachlorophenol	1	NR	5	ND	ND	ND	ND
Phenol	1 <sup>a</sup>	NR	10	ND	ND	0.6 (J)	2
Inorganics							
Aluminum	50-200 (s)	482	11,600	52.1	334	69.1	2,050
Antimony	6			NR	8.9	9.7	40.6
Arsenic	50 (10) <sup>b</sup>	13	21	NR	28.8	13.4	22.1 (J)
Barium	2,000	20	114	3.6	78.9	11.4	73.2
Beryllium	4	1	2.1	NR	1.2	0.10	1.7
Cadmium	5	2.8	6.4	1.1	5.2	NR	0.84
Calcium	--	69,700	477,000	36,500	381,000	39,900	160,000
Chromium	100	8.5	20	1.8	3.7	2.5	40.4
Cobalt	--	9.4	18	1.4	14.9	7.8	16.6
Copper	1,300 (TT)	6.5	28	2.4	2.6	NR	10.8
Iron	300 (s)	283	571,000	286	568,000	43.6	105,000
Lead	15 (TT)	NR	19	ND	ND	1.5	8.2 (J)
Magnesium	---	16,900	88,000	10,200	52,600	11,500	39,400
Manganese	50	145	11,600	36.3	7,870	7.0	2,460
Mercury	2			ND	ND	NR	0.16
Nickel	100	24	131	2.4	13.4	2.9	14.5
Potassium	---	3,250	37,200	840	10,000	1000	10,800
Selenium	50			NR	13.7	3.2	4.2
Silver	100 (s)	NR	4.1	ND	ND	0.83	6.7
Sodium	---	29,700	324,000	16,500	398,000	5,240	297,000
Thallium	2			2.4	43.6	NR	13.9 (J)
Vanadium		8.7	57	ND	ND	1.8	10.8
Zinc	5,000 (s)	7.7	106	2.5	17.7	19.7	109
Cyanide	200			2.1	3.3	5.1	102

Shaded boxes for 2003 sampling event only, indicate MCL exceedances.

ND - Analyzed for but not detected

NA - Not analyzed

NR - Not relevant (chemical was detected in only one sample and is shown as the maximum)

a - Based on AWQC

b - The new MCL value for arsenic of 10 ug/L will take effect on January 23, 2006

c - A second groundwater monitoring was performed in March 1988 and October 1988 to verify the presence of VOCs, specifically methylene chloride and acetone. These results confirmed that there was no VOC contamination in the downgradient monitoring wells. These reports are reported in the Supplemental Investigation Report (September 1990).

(s) - indicates the value is a Secondary MCL based on aesthetic qualities and not health effects.

(TT) - indicates the standard is not numerical but is based on a treatment technique, which is a required process to reduce the level of this contaminant in drinking water. The 'IT is required when the Action Level is exceeded. The Action Level is a health-based limit.

(J) - estimated concentration

### **Semivolatile Organic Compounds**

The compound bis(2-ethylhexyl)phthalate was detected at similar concentrations in both the upgradient and downgradient monitoring wells, as was the case during the 1998 five-year review. The concentrations found during the current review exceeded the MCL and had increased since 1996. This phthalate compound is considered a common laboratory artifact at low concentrations and was detected at low concentrations in the blank during the present review. For these reasons, this compound is not considered to be site-related. Another compound, caprolactam, was not detected in the blank but was detected in both the upgradient and downgradient wells at similar concentrations. The maximum concentration was detected in a downstream well at more than twice the concentration of the maximum upstream value. Because this compound has not been detected previously at the Site, it is not believed to be Site-related either. Data on caprolactam from previous sampling is not available for comparison. No other SVOCs were detected above the sample detection limits in the upgradient or downgradient monitoring wells.

Drinking Water Health Advisories, EPA Regulatory Actions, and Supplementary Data for caprolactam were removed from IRIS on or before April 1997. IRIS reports that the oral RfD for caprolactam is 0.5 mg/kg/day based on the critical effect of reduced body weight in rodent offspring. The maximum concentration measured (78 ug/L) in groundwater during the February 2003 sampling is several orders of magnitude below a concentration, for adults or children, that would approach the intake specified by the oral RfD. Hence, there would be no risk presented by caprolactam because the concentration is very low. Of greater relevance, however, is the fact that the groundwater is not being used. There is currently no carcinogenicity assessment for this chemical.

### **Inorganic Compounds**

Downgradient samples contained significantly higher concentrations of antimony, arsenic, cadmium, chromium, cobalt, iron, lead, manganese and nickel compared to upgradient samples. Antimony, arsenic, selenium and sodium are not considered to be site-related compounds because they were detected at higher concentrations in only one downgradient monitoring well. Also, these metals were not considered site-related compounds during the RI.

Of the compounds detected during the current investigation, the MCLs for iron, manganese and thallium were exceeded only in the downgradient wells. The MCLs for aluminum and antimony were exceeded in both upgradient and downgradient wells.

### **Groundwater Trends**

Bis(2-ethylhexyl)phthalate was detected in the groundwater in both the current sampling effort and during the RI and first five-year review. This compound has never been considered site-related because it has always been detected in the blanks. Further, there is no apparent trend, since its concentration in 1996 had decreased from the found during the RI, yet during the 2003 monitoring it was detected at five times its previous concentration and in excess of the MCL. Because there is no current or future exposure pathway to groundwater, no risks are posed to human health or the environment. Pentachlorophenol, phenol and benzoic acid detected during the RI in the downgradient monitoring wells were not detected at significant levels in the downgradient monitoring wells during either the previous or current five-year

review investigations. The only compound found in the current investigation that has not been seen before is caprolactam in both upgradient and downgradient wells. Therefore, the levels of SVOCs in the groundwater have declined overall.

The concentrations of arsenic, barium, beryllium and nickel have fluctuated slightly over the years, but do not appear to show any significant inclining or declining trends. Cadmium, calcium, iron, magnesium, manganese, selenium, sodium and thallium all show a declining trend throughout the monitoring surveys. Chromium showed a decrease in levels during the first review, however levels increased during the current review investigation. The largest increase was seen in the upgradient well B-2. Minor increases were seen in the downgradient wells. Copper was found to decrease at the time of the first review, however, its levels have increased slightly in one of the downstream wells (B-5) during the present investigation. Lead also was not detected during the previous review, but the recent sampling showed a slight increase in lead in the downgradient wells. Similarly, potassium, silver and zinc had also decreased between the time of the RI and the first review, but have since increased slightly in both the up gradient and downgradient wells. These increases are still significantly below the MCLs for these chemicals and are not of concern as no exposure pathways exist. In general, cyanide has increased since the previous review, the most significant increase, seen in the downgradient well (B-5).

While there are fluctuations in the concentrations found in these wells, it is difficult to say whether they can be solely attributed to actual concentration changes or, at least in part, to the differences in sample collection and laboratory analyses for each of the three sampling events considered. Efforts were made to incorporate as many of the operational documents and procedures from the previous review, such as the QAPP and FSP. The use of standardized approaches acted to minimize variations in the field and laboratory procedures. The contaminants coinciding with the shaded cells in Table 4 exceed the current MCLs for drinking water contaminants; hence, it follows that groundwater monitoring should continue at the Site. However, because the use of groundwater is prohibited under Elyria City Ordinance 2002-119, the monitoring frequency could potentially be reduced.

## **2. Surface Water - Black River**

The Black River surface water analysis consisted of sample collection from the quarry outfall into the Black River, a sample collected upstream of the outfall and downstream of the outfall (see Attachment 6). Based on the literature review and findings from the first five-year review, the samples were analyzed for SVOCs, inorganics (metals and cyanide), oil and grease, total suspended solids, total dissolved solids, acidity, alkalinity, chlorides, sulfate and filtered metals. The downstream surface water sample collected from the river was compared to the upstream surface water sample and the quarry outfall sample, as was done during the 1998 five-year review. A chemical was considered to be potentially site-related if: it was detected at greater than five times the concentrations in the blank; and, its concentration in the downstream surface sample from Black River was greater than two times the upstream surface water sample; and, it was identified as a site-related compound in the quarry surface water. The chemical was alternatively site-related if: its concentration in the quarry outfall sample was two or more times the concentration in the upstream Black River sample; and the contaminant loading from the outfall was algebraically reconcilable by mass balance to the observed concentration downstream in the Black River.

The February 2003 analytical results for the surface water samples from the Black River were compared to the latest Ohio Water Quality Standards for surface water. Once site-related contaminants were identified, current contamination was evaluated and compared to historical trends. A summary of the Black River surface water data is presented below in Table 5.



**Table 5: Surface Water Data Summary - Black River**

Chemical	Range of Detected Concentrations from RI Sampling (June 1987)		Range of Detected Concentrations-1 <sup>st</sup> Five-Year Review (Nov. 1996)		Range of Detected Concentrations-2nd Five-Year Review (Feb. 2003)		Fed. AWQC for fish consum ug/L	Most Stringent Freshwater Aquatic Life Criteria Acute/Chronic ug/L
	Minimum (ug/L)	Maximum (ug/L)	Minimum (ug/L)	Maximum (ug/L)	Minimum (ug/L)	Maximum (ug/L)		
Organics*								
Diethylphthalate	N.A.V.	N.A.V.	NR	0.9	ND	ND	44,000	980/ 220 (Ohio)
Inorganics								
Aluminum	33	58	62.2	70.8	12.9	24.3	–	750/ 87
Antimony	ND	ND	ND	ND	7.1	8.7	640	–
Barium	30	34	22.8	22.9	17.6	20.3	–	–
Calcium	62,800	69,800	40,400	41,100	36,200	42,400	–	
Chromium	NR	4.2	ND	ND	0.68	0.91	–	570/ 74 <sup>a, b</sup>
Copper	4.2	11	N.R.	3.5	ND	ND	–	13/ 9 <sup>b</sup>
Iron	28	128	N.R.	219	22.9	80.8	–	–/1,000
Lead	5.8	19	ND	ND	NR	1.9	–	65/2.5 <sup>b, c</sup>
Magnesium	18,100	18,900	11,000	11,000	9,410	11,100	–	–
Manganese	17	76	21.2	22.9	31.1	34.5	100	–
Nickel	N.R.	100	ND	ND	1.1	2.1	4,600	470/52 <sup>b, c</sup>
Potassium	5,490	5,750	3,500	4,010	4,420	4,810	–	–
Sodium	23,800	24,900	9,800	9,860	34,600	38,400	–	–
Vanadium	ND	ND	ND	ND	1.2	1.5	–	–
Zinc	4.9	160	ND	ND	12.9	22.4	26,000	120/ 120 <sup>b</sup>
Cyanide	ND	ND	1.2	2.1	ND	ND	220,000	22/5.2
Chloride(mg/L)	35	37	20	85	70.3	74.8	–	860/ 230
Sulfate (mg/L)	99	109	49	104	58.9	86.7	–	–

\* SVOC results were rejected due to Laboratory QA/QC problems. VOCs were detected at low levels and were found to be common lab contaminants and not likely to be site-related.

a - These values represent chromium III

b - chemical-specific value derived from hardness-dependent equation using 100mg/L CaCO<sub>3</sub>, which is similar to that of the Black River

c - EPA is actively addressing this criterion and so this value may change substantially in the near future.

d - the previous review calculated a hardness based value of 1,400/160

In 1996 and 2003, no VOCs were tested for in surface water. Full SVOC and IOC parameter were sampled for

NR - Not relevant, only one positive detection was found for the chemical and presented as a maximum.

N.A.V. - Result not available due to QA/QC problem.

### **Semivolatile Organic Compounds**

No site-related SVOCs were found in the Black River or the quarry outfall during the current review. The compound, diethylphthalate, was detected during the previous Review at a low concentration in the surface water sample from the upgradient portion of the Black River. No exceedances of Ohio Water Quality Standards for SVOCs were noted in the Black River at the quarry outfall.

### **Inorganic Compounds**

Several metals were detected, but at similar concentrations in the upstream and downstream Black River samples. Further, none of these detections exceeded the currently available most stringent water quality criteria for the protection of human health from consuming fish or for the protection of aquatic organisms. Based on the upstream-to-downstream evaluation criterion described above, it was determined that most of the metals may have increased slightly from the upstream to the outfall locations, but then decreased in the downstream sample to below the upstream concentration. Only iron and manganese were identified as potentially site-related during the previous review, but a mass balance analysis confirmed that the quarry had not impacted the Black River.

Using the quarry outfall-to-upstream criterion described above for the current sampling data, only one metal in the quarry outfall satisfied at least part of the criteria as site-related. Compared to the upstream surface water sample in the Black River, the quarry outfall sample showed more than double the upstream's level of iron. However, according to the previous mass balance analyses, the flow rates estimate that the river has 78 times the flow of the quarry outfall. Even if the discharge from the quarry to the Black River was to increase significantly, there will be little to no impact to the Black River due to the enormous dilution effect from the significant flow difference between the quarry outfall and River flows. The elevated values are only seen immediately outside the quarry outlet before complete mixing of the waters has occurred. Three metals --antimony, nickel and vanadium had slightly higher levels downstream than in the quarry outfall point, but not significant enough for the above criteria.

This result reinforces the fact established during the previous five-year review that the discharge from the quarry has a negligible effect on the water quality of the Black River. The outfall's high metal concentrations might exist near the bank of the river at the outfall, but diminish rapidly through the mixing zone and virtually disappear downstream due to dilution. No exceedances of Federal or Ohio Water Quality Standards were noted for metals in the Black River.

### **Black River Surface Water Trends**

The analytical results indicate SVOC concentrations are apparently declining in the Black River since they were detected during the RI, but were not detected during the current sampling event. The general trend for metals in the Black River is that they appear to be declining. Nickel and zinc detected in the downgradient surface water sample from the Black River were determined to be site-related contaminants during the RI. However, neither nickel or zinc were found to be site-related contaminants during the previous review, as they were not detected above the detection limit in the samples collected from the Black River or quarry discharge. Low levels were found during the present review, however at concentrations several orders of magnitude below the initial RI findings.

Manganese, sodium and vanadium were the only contaminants demonstrating an increasing trend throughout the sampling history evaluated. Manganese and sodium were determined to be potentially site-related contaminants with respect to the quarry outfall during the past Review. However, mass balances of manganese and sodium have demonstrated that the quarry discharge is not affecting the downstream portion of the Black River. Hence, the trend for manganese and sodium is still not of concern as far as measurable influence on the Black River.

Sediment samples were not included as part of the previous nor current investigation, as it was determined from a comparison of upstream and downstream Black River sediment samples that the Site was not affecting the Black River. Because the previous sampling rounds have repeatedly determined that the quarry is not impacting the Black River and that no site-related contaminants have been found in the River in excess of naturally occurring levels, it may be possible to optimize future monitoring by discontinuing or reducing the frequency and analytical parameters for Black River surface water, sediments and fish tissue.

### 3. Surface Water - Quarry

At the time of this writing, quarry surface water samples had not been collected during the February 2003 sampling due to unfavorable temperature and weather conditions. Sampling of this media is planned for summer 2003, as shown by Figure 5. The analytical results for these samples will be evaluated to determine the extent of contamination in this media and to make future sampling recommendations. To establish potential trends, the maximum concentrations of site-related contaminants will be compared to the RI and the first five-year review maximum concentrations for the same site-related compounds.

A tiered process will be used to determine whether a chemical identified during the sampling is potentially site-related. If the chemical is detected at greater than five times the concentrations in the blank and detected at greater than two times the concentrations in the upgradient (background) groundwater concentration and, either found at more than one sample location, or detected only at one sample location, but was site-related during the previous review.

Once the site-related compounds are identified, they will be further evaluated to determine their nature and extent by characterizing current conditions and disclosing historic trends. The analytical results for the surface water samples from the quarry will also compared to the latest AWQCs for surface water. The data for surface water sampling to be obtained later during summer 2003 will be evaluated according to the previous quarry sampling results from the RI and first five-year review, as well as compared to the current water quality criteria. These data are summarized in the following table. Recommendations for future sampling will be made following evaluation of the 2003 data, which will be provided in an addendum to this report.

**Table 6: Surface Water Data Summary - Quarry Pond**

Chemical	Range of Detected Concentrations from RI Sampling (June 1987)		Range of Detected Concentrations. 1 <sup>st</sup> Five-Year Review (Nov. 1996)		Fed. AWQC for fish consump. ug/L	Most Stringent Freshwater Aquatic Life Crit. Acute/Chronic ug/L
	Minimum (ug/L)	Maximum (ug/L)	Minimum (ug/L)	Maximum (ug/L)		
Organics*						
Bis(2-ethylhexyl) phthalate	3	14	ND	ND	2.2	27/ 3 <sup>a, b</sup>
Diethylphthalate	N.D.	ND	ND	ND	44,000	980/ 220 (Ohio)
Inorganics						
Aluminum	33	808	ND	ND	---	750/ 87
Antimony	ND	ND	ND	ND	640	---

Arsenic	NR	8.7	ND	ND	0.14	340/ 150 <sup>c</sup>
Barium	21	105	27.9	43.4	---	---
Cadmium	NR	12	ND	ND	---	2.0/ 0.25 <sup>c</sup>
Calcium	63,700	315,000	53,100	220,000		
Chromium	ND	ND	NR	3.4	---	570/ 74 <sup>c, d</sup>
Cobalt	ND	ND	NR	50.7		
Copper	5.9	14	N.R.	292	---	13/ 9 <sup>c</sup>
Iron	57	1,600,000	N.R.	847,000	---	— / 1,000
Lead	3.9	19	NR	2.4.	---	65/ 2.5 <sup>c</sup>
Magnesium	16,800	88,900	14,100	61,700	---	---
Manganese	28	25,700	138	12,800	100	---
Nickel	9.4	86	ND	ND	4,600	470/ 52 <sup>c</sup>
Potassium	4070	8050	3,200	5,350	---	---
Silver	ND	ND	NR	272	—	3.2/ — <sup>c</sup>
Sodium	37,300	49,200	42,100	48,300	---	---
Vanadium	6.8	60	NR	37.5	---	---
Zinc	3.5	37	ND	ND	2,600	120/ 120 <sup>c</sup>
Cyanide	NA	NA	NR	1.5	220,000	22/ 5.2
Chloride (mg/L)	NA	NA	38	85	---	860/ 230
Sulfate (mg/L)	NA	NA	103	2,090	---	---

\* SVOC results were rejected due to Laboratory QA/QC problems. VOCs were detected at low levels and were found to be common lab contaminants and not likely to be site-related.

a - Insufficient data to develop criteria. Value at the lowest observed effect level for phthalate esters.

b - A full set of aquatic life toxicity indicate this chemical is not toxic to aquatic organisms at or below its solubility limit.

c - chemical-specific value refers to total ionic species and is derived from hardness-dependent equation using 100mg/L CaCO<sub>3</sub>, which is similar to that of the quarry

d - Values represent chromium III.

N.AN.- contaminant was not analyzed for in filtered surface water samples

NR - Not relevant, only one positive detection was found for the chemical and presented as a maximum.

N.AV. - Result not available due to QA/QC problem.

The following information indicates the quarry surface water conditions as of the last five-year review sampling at the Site in November 1996.

### Semivolatile Organic Compounds

No SVOCs were detected in the surface water samples collected from the quarry during the first five-year review; hence, no exceedances of water quality standards have occurred. The upcoming five-year review sampling (summer 2003) will determine whether this is still true.

## **Inorganic Compounds**

During the previous five-year review, only calcium, iron, manganese, and vanadium were detected and validated in quarry samples at significantly higher concentrations compared to upgradient monitoring well samples; hence, they were considered to be site-related. The site-related impact appears to increase with water column depth, since the maximum concentration of these metals was detected in the water samples collected from a depth of 60 feet.

## **Quarry Surface Water Trends**

A comparison of RI to the 1996 analytical results indicates that SVOCs appear to be declining. Some compounds were detected during the RI, but were not detected in 1996. Calcium, iron, manganese and vanadium were identified as site-related contaminants in 1996. During the RI, magnesium, nickel, and zinc were also considered to be site-related compounds, but no longer satisfied the criteria for site-relatedness as per the 1996 sampling. Magnesium was detected in the quarry surface sample at a lower concentration compared to the upgradient groundwater sample. Nickel and zinc were not detected above detection limits in the quarry surface water sample.

The concentrations of site-related contaminants in the quarry surface water have demonstrated a declining trend. The concentrations of barium, iron, magnesium, calcium, manganese, vanadium, nickel, and zinc in the quarry surface water samples are uniformly lower than the RI results. The upcoming summer 2003 sampling will confirm whether these trends are ongoing.

Like metals, standard water quality parameters are also apparently improving at the Site. The maximum concentrations of water quality parameters measured during the 1996 investigation (TSS, TSD, total alkalinity and sulfate) indicated a declining trend when compared to maximum concentrations detected during the RI. However, the chloride concentrations in the 1996 quarry surface water samples have increased compared to the maximum concentrations detected in the RI.

## **4. Quarry Sediment**

At the time of this writing, quarry sediment samples had not been collected during the February 2003 sampling due to unfavorable temperature and weather conditions. Sampling of this media is planned for summer 2003. Figure 6 indicates proposed sampling locations. The analytical results for these samples will be evaluated to determine the extent of contamination and to make future sampling recommendations. To establish potential trends, the maximum concentrations of site-related contaminants will be compared to the RI and first five-year review maximum concentrations for the same site-related compounds.

During the first five-year review, the compounds detected in the sediment samples were regarded as potentially site-related according to a tiered evaluation. A similar analysis will be applied to the upcoming sampling results also. As with the previous review, once the site-related compounds are identified, they will be further evaluated to determine potential trends. For SVOCs, metals, and cyanide, the analytical results were compared to background soil samples. For VOCs, pesticides, and PCBs, the analytical results were compared to the RI data, site-related compounds in the soil, and upgradient groundwater since these compounds were not analyzed for in. This approach for analysis of VOCs, pesticides, and PCBs was used because the current soil samples were not analyzed for these parameters making it necessary to evaluate results against other criteria.

To evaluate historical trends, the maximum concentrations of 1996 site-related contaminants were compared with the RI's maximum concentrations for the same site-related compounds to determine whether concentrations had increased or decreased. The following is the current trend assessment as per the first

review. This information will be reassessed and updated when the new data are available in summer 2003. Recommendations for future sampling will be made following evaluation of the 2003 data, which will be provided in an addendum to this report.

**Table 7: Sediment Data Summary – Quarry Pond**

Chemical	Range of Detected Concentrations for RI (June 1987)		Range of Detected Concentrations for Five Year Review (November 1996)	
	Minimum (ug/kg)	Maximum (ug/ kg)	Minimum (ug/ kg)	Maximum (ug/ kg)
Volatile Organics				
Methylene chloride	14.5	25	5	58
Acetone	250	1,100	38	2,800
Carbon disulfide	1.6	27	16	26
2-Butanone	65	336	7	830
Benzene	NR	3.7	8	16
Tetrachloroethene	18	37	34	48
Toluene	72	370	9	79
Ethylbenzene	NR	28	---	17
Xylene	ND	ND	---	70
Semivolatile Organics				
Bis(2-ethylhexyl)phthalate	4,000	26,000		
1,3-Dichlorobenzene	ND		---	180
1,4-Dichlorobenzene	ND		---	200
4-Methylphenol			---	390
1,2,4-Trichlorobenzene			---	170
Naphthalene			94	240
4-Chloro-3-methylphenol			---	280
Pentachlorophenol	8,830	25,000		
2-Methylnaphthalene			130	600
Acenaphthene			---	230
Fluorene			150	1,900
Phenanthrene	7100	23300	44	10,000
Anthracene	72	4000	160	2,600
Di-n-butylphthalate	2,400	29,000	---	3,500
Fluoranthene	1,200	17,000	70	3,400
Pyrene	3,100	12,200	1,000	5,500
Butylbenzylphthalate	36,000	73,000	---	42

Chemical	Range of Detected Concentrations for RI (June 1987)		Range of Detected Concentrations for Five Year Review (November 1996)	
	Minimum (ug/ kg)	Maximum (ug/ kg)	Minimum (ug/ kg)	Maximum (ug/ kg)
Benzo(a)anthracene	210	4,450	33	3,000
Chrysene	160	4,200	61	3,800
Bis(2-ethylhexyl)phthalate		26,000	---	1,700
Di-n-octylphthalate	2,600	5,500	---	960
Benzo(b)fluoranthene	300	6,000	110	1,200
Benzo(k)fluoranthene	300	6,000	---	1,400
Benzo(a)pyrene	130	4,900	56	650
Indeno(1,2,3-cd)pyrene	170	800	710	1,400
Dibenz(a,h)anthracene	ND	ND	---	410
Benzo(g,h,i)perylene	190	700	470	1,400
<b>Pesticides (ug/kg)</b>				
Arochlor 1248		1,000		
Heptachlor	ND	ND	---	29
Aldrin	ND	ND	21	69
4,4'-DDT	ND	ND	---	14
alpha-Chlordane	ND	ND	7.6	75
gamma-Chlordane	ND	ND	---	34
<b>Inorganics (mg/kg)</b>				
Aluminum	949	17,700	6,400	30,300
Arsenic	40	42	7.2	43.9
Barium	25	112	54.5	129
Beryllium	NR	2.3	---	0.88
Cadmium	ND	ND	0.58	1.6
Calcium	2,440	73,700	4,110	19,900
Chromium	9.7	64	12.9	117
Cobalt	NR	4.9	8.2	23.3
Copper	18	300	24.5	333
Iron	19,100	112,000	27,200	214,000
Lead	14	100	24.5	192
Magnesium	699	20,300	1,860	7,420
Manganese	201	1140	170	3,470
Mercury	0.45	0.73	0.34	0.72

Chemical	Range of Detected Concentrations for RI (June 1987)		Range of Detected Concentrations for Five Year Review (Nov. 1996)	
	Minimum (ug/ kg)	Maximum (ug/ kg)	Minimum (ug/ kg)	Maximum (ug/ kg)
Nickel	12	103	8.9	84.1
Potassium	477	2290	1,150	3,960
Selenium	ND	ND	4.8	6.0
Sodium	ND	ND	177	1,420
Thallium	ND	ND	4.0	10.5
Tin	10	108	ND	ND
Vanadium	8.1	29	15.0	50.5
Zinc	80	369	41.1	371

### Volatile Organic Compounds

From the 1996 sampling, methylene chloride, acetone, 2-butanone, tetrachloroethene, toluene, and ethylbenzene were detected in the sediment samples and were considered to be the only site-related VOCs. The concentration of toluene and ethylbenzene had declined since the RI and the concentration of methylene chloride, acetone, 2-butanone, and trichloroethylene (TCE) had increased since the RI.

### Semivolatile Organic Compounds

Anthracene, fluorene, phenanthrene, di-n-butylphthalate, fluoranthene, pyrene, benzo(a)anthracene, chrysene, bis(2-ethylhexyl)phthalate, di-n-octylphthalate, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene were considered site-related because they were detected at significantly higher levels compared to maximum concentration in the background samples. Fluorene was considered to be a site-related compound in the 1996 sampling but not during the RI, whereas diethylphthalate, pentachlorophenol and butylbenzylphthalate were considered to be site-related during the RI but not as per the 1996 sampling. The concentrations of all SVOCs except indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene and fluorene had declined since the RI, while the concentrations of indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene and fluorene had increased as of 1996.

No PCBs were detected in the quarry sediment samples in 1996. The pesticides detected in the sediment samples were detected at generally low and estimated concentrations and were not considered to be site-related compounds.

### Special Parameters

Oil and grease were detected at significantly higher concentrations in the sediment samples and were considered to be site-related compounds in 1996 as they were during the RI. These parameters will be sampled for in summer 2003.

### Inorganic Compounds

Calcium, chromium, copper, iron, magnesium, mercury, nickel, potassium, selenium, sodium, thallium and zinc were detected at significantly higher concentrations compared to background soil samples, and were defined as site-related compounds in 1996. Selenium and sodium were considered to be site-related



compounds in the 1996 samples, but were not considered to be site-related during the RI. Arsenic, lead and tin were considered to be site-related compounds during the RI, but not considered to be site-related compounds as per the 1996 samples. As of the 1996 sampling, concentrations of arsenic, potassium, sodium and zinc have increased since the RI, while all other inorganics have decreased.

## 5. Fish Tissue

At the time of this writing, fish tissue samples had not been collected during the February 2003 sampling due to unfavorable temperature and weather conditions. Sampling of this media is planned for summer 2003. Figure 7 indicates proposed sampling locations. The analytical results for these samples will be evaluated to determine the extent of contamination in fish and to make future sampling recommendations.

Fish tissue results from the 1996 sampling under the first five-year review were first evaluated by examining the average concentration of a compound in a fish tissue sample from a particular species from the upstream, downstream, and quarry locations. A second analysis was also performed to evaluate average concentrations of compounds in all fish tissue from the quarry, downstream Black River, and upstream Black River.

### Fish Tissue Trends

All data comparisons between the 1996 sampling and the 1990 Supplemental Investigation were tempered with the understanding that the fish tissue data for the 1990 Supplemental Report were obtained under warm weather conditions during which the fish were actively feeding and the catch was good. The November 1996 samples were obtained under unfavorably cool weather conditions, during which time the fish were lethargic and the catch was poor. These data, presented in Table 8, show increases in cadmium and copper and decreases in manganese and mercury in the quarry fish. The Black River upstream and downstream samples showed an increase, in cadmium and copper and a decline in mercury. Manganese levels increased in the upstream sample and decreased in the downstream sample.

By the time the sampling could be conducted for the 2003 five-year investigation, the weather conditions were worse than those of the previous review. During the previous review, the tissue samples were limited, hence, the sample results from all fish were combined to calculate average concentrations of each compound at different locations. This can be misleading since different species contain different lipid compositions, which directly affect the tissue's adsorption capacity for metals. Hence, EPA decided to wait until late summer 2003 before obtaining tissue samples for this review. The new data will be compared to the previous data shown below to discern any trends, although it must be remembered that any differences in tissue concentrations may be attributable to differing weather conditions and feeding patterns during the sampling. Recommendations for future sampling will be made following evaluation of the 2003 data, which will be provided in an addendum to this report.

**Table 8: Fish Tissue Data Summary**

Chemical	Range of Detected Concentrations Supplemental Investigation (August 1989)		Range of Detected Concentrations Five-Year Review (November 1996)	
	Minimum (ug/ kg)	Maximum (ug/ kg)	Minimum (ug/ kg)	Maximum (ug/ kg)

<b>Quarry</b>				
Cadmium	NA		9.3	75.2
Copper	NA		283	409
Manganese	1,060	3,730	124	402
Mercury	220	453	49.1	357
<b>Black River (upstream of quarry outfall)</b>				
Cadmium	NA		---	7.8
Copper	NA		328	736
Manganese	270	390	172	1,170
Mercury	200	274	55.5	251
<b>Black River (downstream of quarry outfall)</b>				
Cadmium	NA		---	4.9
Copper	NA		306	1,020
Manganese	490	1,040	111	584
Mercury	260	438	74.1	235

## 6. Soil

At the time of this writing, soil samples had not been collected during the February 2003 sampling due to unfavorable temperature and weather conditions. Sampling of the soil is planned for summer 2003. Figures 8 indicates the proposed sampling locations. The analytical results for these samples will be evaluated to determine the extent of soil contamination and to make future sampling recommendations. The following information is a summary of the previous data which will be used as a basis for evaluating the summer 2003 sampling results.

The evaluation of soil contamination during the 1996 sampling for the first five-year review involved identifying potentially site-related contaminants. A chemical compound (SVOC, metal, or cyanide) was regarded as potentially site-related when its maximum concentration detected was greater than two times its maximum concentration in the background soil samples. An SVOC was alternatively considered as site-related when the sample showed a detection of one of the cPAHs.

The site-related compounds were then evaluated to determine potential trends. Trends were established by comparing the 1996 maximum concentrations of the site-related SVOCs to both the RI concentrations and the removal action soil cleanup criterion, which prescribed that the total concentration of four target compounds remaining in the soil after excavation must not exceed 300 ppb. The target compounds were four of the cPAHs -- benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene and benzo(a)anthracene. Trends could not be evaluated for inorganics in 1996 because earlier analytical work on soil from the ditch and the boat ramp did not include inorganics.

**Table 9: Soil Data Summary for Republic Steel Quarry Site**

Chemical	Background Concentrations (November 1996)		Range of Detected Concentrations For RI (June 1987)		Range of Detected Concentrations for 1 <sup>st</sup> Five-Year Review (November 1996)	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
<b>Organics (ug/kg)</b>						
Di-n-butylphthalate			1900	5400		
Naphthalene	26	210			24	44
2-Methylnaphthalene	36	280			26	76
Dibenzofuran	44	65			22	28
Pentachlorophenol	---	---			120	350
Phenanthrene	31	180		250	31	120
Anthracene	---	24				120
Fluoranthene	34	190	510	780	34	78
Pyrene	28	210	330	4300	67	120
Benzo(a)anthracene	35	100	260	510	48	250
Chrysene	28	130	250	510	63	300
Indeno(1,2,3-cd)pyrene	61	70			34	280
Benzo(g,h,i)perylene	---	48			30	260
<b>Inorganics (mg/kg)</b>						
Aluminum	2,420	12600			658	1,530
Antimony	1.3	2.6			1.4	3.0
Arsenic	8.5	29.1			6.8	16.2
Barium	18.6	105			4.4	53.3
Cadmium	0.62	0.94			0.31	1.4
Calcium	1,080	3,220			446	1,130
Chromium	6	17.1	32	178	5.7	18.4
Cobalt	3.7	15.6			2.0	4.1
Copper	10.8	21.7	85	94	16.8	45.8
Iron	13,100	26,300			7,730	107,000

Chemical	Background Concentrations (November 1996)		Range of Detected Concentrations For RI (June 1987)		Range of Detected Concentrations: 1 <sup>st</sup> Five-Year Review (November 1996)	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Lead	22.3	118			8.2	38.6
Magnesium	618	2,430			154	551
Manganese	110	964	842	5,990	61.5	376
Mercury	---	---	ND	0.34	0.12	0.24
Nickel	9.9	17.9			1.7	9.0
Potassium	479	978			327	2,000
Selenium	1.4	1.7			3.2	4.1
Sodium	217	264			171	400
Thallium	---	---			---	1.9
Vanadium	8.7	25.8			4.6	12.8
Zinc	49.6	178			14.7	30.6
Cyanide	0.14	0.41			0.12	0.44

### Semivolatile Organic Compounds

During the 1996 sampling investigation, there were no site-related SVOCs in the boat ramp area. In the discharge ditch area, benzo(a)anthracene, chrysene, anthracene, pentachlorophenol, indeno(1,2,3-cd)pyrene and benzo(g,h,i)perylene were detected in soil samples at significantly higher concentrations relative to the background soil samples. While anthracene, pentachlorophenol, and benzo(g,h,i)perylene were not considered to be contaminants of concern because they are not carcinogens, benzo(a)anthracene and chrysene were considered site-related contaminants of concern.

### Inorganic Compounds

As per the 1996 sampling, copper was considered to be a potentially site-related compound in the boat ramp area. In the ditch area, iron, mercury, potassium, selenium, and thallium were detected at significantly higher concentrations compared with the background soil sample.

### Soil Trends

The maximum concentrations of the four cPAHs detected in the 1996 samples were compared to the maximum concentrations of these compounds detected in the post-excavation sample to identify changes. Benzo(b)fluoranthene and benzo(k)fluoranthene were not detected above their respective detection limits in the 1996 soil samples or in the post-excavation samples; hence, there is no recognizable concentration trend for these compounds.

The concentrations of benzo(a)anthracene and chrysene in the 1996 soil samples were higher than the those of the post-excavation soil samples. This increase was attributable to either procedural differences; the

1996 data were grab samples and the post-excavation data were composite samples which may have produced a dilution effect, or may have disclosed true contamination that was missed during the removal. The sum of the concentrations of cPAHs exceeded the soil cleanup criteria of 300 ppb at three sampling locations. However, as mentioned, the toxicity criteria for cPAHs have been revised since the 1990 Supplemental Investigation. These areas will be revisited during the summer 2003 sampling to determine whether there is contamination at these locations. In general, most of the chemicals listed below were detected at below the area background sample levels. Recommendations regarding future sampling will be made following the evaluation of the 2003 data.

### **Site Inspection**

A site inspection in conjunction with monitoring was conducted by EPA Region 5 STAT Contractor, EDI, on February 25-28, 2003. A representative from the City of Elyria Engineering Department accompanied the sampling team during this time. The weather conditions were not optimal; the air temperature was 10°F, with 6-8 inches of snow cover. EDI personnel collected groundwater samples from monitoring wells B-1 through B-3 and B-5 through B-8. Monitoring well B-4 contained a biological growth and a compromised well riser and was not sampled. This well could not be sampled during the first five-year review either for the same reasons. Black River surface water samples were collected from upstream, down stream, and at the quarry outfall into the Black River (See Attachment 6). Due to the weather, the quarry-related samples such as surface water, sediment and fish tissue, could not be collected. The ground was frozen and soil samples could not be collected either. These samples are planned for the next field sampling event scheduled for July -August 2003. At that time, the oil and grease surface water samples from the Black River will be collected and well B-4 will be reexamined and sample for both the biological material and groundwater.

At the time of the sampling in February 2003, openings in the fence either had to be made or re-opened by the City in order to access some of the monitoring wells. These openings were made in the northwest near B-3, southwest near B-4 and northeast near B-1 and B-7. Well B-7 had no riser cap and its lid was unhinged. Well B-4 also sustained damage to its riser. EDI placed new riser caps and lid locks on wells B-2, B-4 and B-7. EDI noted that the City arrived to repair the breach in the northwest portion of the fence line on February 28<sup>th</sup>.

A site inspection was conducted on May 7, 2003 by the EPA Site RPM and OEPA Site Coordinator. Also present were representatives from the City of Elyria Solicitor's Office and Engineering Department. The Director of Industrial Relations from Maverick Tube Corporation also participated (see Attachment 7). These representatives were also interviewed as part of the community interview process (see Attachment 4). The purpose of the inspection was to assess the protectiveness of the remedy, including the condition of the fencing and posted signs to restrict access, and the condition of the Site itself, i.e., the quarry pond and surrounding land. The institutional controls enacted more recently as a result of the September 2001 ESD were also evaluated by visiting the engineering department to review maps. The City had previously provided EPA with proof that an ordinance was in place to restrict access and use of the quarry for any purposes such as fishing, swimming and boating, and that the property's zoning had been restricted to H-1 (Heavy Industrial). These controls also prohibit the use of groundwater and require the use of the Elyria public water supply, its source being Lake Erie (see Attachment 2).

During the inspection, the representatives met and discussed Site and community issues. The representatives also attempted to walk the fence line, however thick brush and trees prevented close viewing of the full perimeter. The RPM noted that the areas which were purposely breached to gain access to the monitoring wells in February had been repaired. There are two additional areas where the fence is in need of

repair; by the quarry outfall and in the southeastern most part of the fence. These areas were pointed out to the City and Maverick Tube representatives. There is also a small portion of the fence line, just south of the access point to well B-3 which is also possibly breached or bent down and the ground is very low. Consequently, this area collects water and has become a small slough. Further, the area just outside of the fence, appears to be a small household refuse dump. Although not strictly a Site-related issue, EPA has recommended to the City that this area be cleaned up for sanitation purposes.

Inside the quarry area, an abundance of wildlife and vegetation was noted. The small island in the southwest portion of the quarry, which is oftentimes submerged, was inhabited by 1-2 breeding pairs (eggs were visible) of Canadian geese. Other waterfowl were observed swimming in the quarry pond. Deer were also heard and seen on the strip of land between the quarry fence line and the Black River. The pickle liquor discharge ditch leading into the quarry is still visible but has filled in with vegetation. Evidence of trespassing activity was noted also.

The RPM also visited the municipal offices where maps of the City property and aerial printouts were reviewed and obtained. An interview was also held with the City's Director of Safety Services and Engineering Services to determine security procedures and record keeping.

A meeting was also held with the City of Elyria Schools to discuss the issues surrounding the siting or expansion project of the senior high school and the potential locations and how this would be impacted by the RSQ Site (see Attachment 4 and Figure 9). The only concerns expressed in recent years involved the potential siting of the senior high school facility near the RSQ Site.

Finally, a visit was made to the local Administrative Record repository at the Elyria Public Library, 320 Washington Avenue, to review the documents. The reference librarian indicated that the documents for the RSQ Site are rarely reviewed or consulted by the public; hence, the documents were kept in a very inconspicuous location. A listing of the contents of the repository was made (see Attachment 8). Based on the fact that no comments were received during the ESD or NPL deletion processes, and that no member of the public has come forward with information or questions during either the previous or current five-year review, there is little to no public concern about this Site.

### **Interviews**

As mentioned, interviews were conducted with various representatives from the City of Elyria legal, engineering and safety departments, Maverick Tube Corp., the Elyria School system, and two members of the community who represent an independent citizen's panel formed to advise the Elyria School Board on potential high school locations. These interviews are summarized in Attachment 4.

## **VII. Technical Assessment**

### **Question A: Is the remedy functioning as intended by the decision documents?**

Based on a review of relevant documents, applicable or relevant and appropriate requirements (ARARs), risk assumptions, and the results of the site inspection, the remedy currently appears to be functioning as intended by the ROD and ESD, and is expected to continue in this manner. The RA for this Site was relatively simple, consisting of soil excavation, groundwater monitoring as long as necessary, and institutional controls. The contaminated areas of this Site include the quarry sediments, which are inaccessible to humans and fish (to some degree) because they are silted over and lay beneath an average depth of 60 feet of water. The quarry and surrounding land are also enclosed by a fence. The other media of

concern is groundwater, however there is no exposure to this media because all potable water is presently supplied by the Elyria municipal water supply.

The more recent establishment of institutional controls as part of the RA, affords no opportunity for exposure to any contaminated media, as long as it is implemented effectively. As the property owner, the City of Elyria has declared restrictions on the property by authorizing Elyria City Ordinance No. 2002-119 on June 21, 2002. The ordinance prohibits groundwater use, requiring the use of the Elyria municipal water supply as the sole source of potable water. The ordinance also prohibits fishing swimming, boating, public access or use of the quarry. Further, all current and future owners of the property are required to maintain the perimeter fence and warning signs. The ordinance also limits the zoning use to Heavy Industrial, prohibiting all residential, recreational or commercial uses. The declaration also provides that all of the restrictions contained within are covenants and will run with the land; all future owners must accept the terms of the declaration.

Based on the limited sampling results (groundwater and Black River surface water) and observations made during the site visits, the remedy appears to be containing any Site-related contaminants. The Black River data do not indicate that it is being impacted by the quarry or groundwater contaminants. This finding is consistent with the previous five-year review findings. Additional quarry-specific data which will be collected in summer 2003 will help to determine whether this is true. Observations made on May 7, 2003 indicate that the perimeter fence and signs are being maintained by the City. There is no evidence of regular property use except for some occasional trespassing activity. All interviews conducted on May 7, 2003 indicated that the general public consensus and tendency is to avoid the quarry property. Consistent also with the previous five-year review is the fact that the Site does not appear to be impacting the surrounding ecological system, as an abundance of wildlife was noted during the inspection.

Regarding O&M at the Site, the work described in the SOW for RD/RA does not formally require O&M. The currently adopted procedures have involved maintaining Site security, Site appearance and institutional controls prohibiting both recreational, commercial and residential use of the Site, and groundwater use. The City of Elyria, as the Site owner, is responsible for enforcing the institutional controls at the Site since adopting City Ordinance 2002-119. There is room for improvement regarding the implementation of some provisions under this ordinance -- namely perimeter fence maintenance and posting of signs, since past experience shows that trespassing is continually occurring at a low level. The OEPA has agreed to oversee O&M at the Site as per the SSC, and may choose to implement additional O&M activities.

**Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?**

There have been no changes in the physical conditions of the RSQ Site that would affect the protectiveness of the remedy. There have been changes in the standards identified in the ROD. Some of these changes were addressed during the previous (Level H) five-year review of June 1998, in which risks were recalculated for human health and ecological receptors. Additional changes since the last review are discussed below.

**Chemical-Specific ARARs**

The chemical-specific ARARs for the each of the affected Site media are described below. No new classes of potential chemical-specific ARARs were noted since the ROD. The controlling ARAR categories remain federal Maximum Contaminant Levels (MCLs) under the Safe Drinking Water Act (SDWA) and Ambient Water Quality Criteria (AWQC) under the Clean Water Act (CWA). However, since the signing of

the ROD and 1998 five-year review, the number of regulated chemicals has increased and in some cases, values for certain chemicals have been revised.

### **Groundwater**

The ROD identified federal MCLs and some federal AWQCs as ARARs for groundwater. Since MCLs were exceeded by beryllium and nickel during the RI, the ROD called for continued groundwater monitoring but allowed the exceedances, since groundwater was not used for drinking water. Since the ROD, MCLs were promulgated for antimony, iron, manganese and thallium, as documented in the 1998 five-year review. Since 1998, MCLs have been promulgated for methylene chloride and pentachloro-phenol as shown in Table 10. In the case of arsenic, the MCL was recently revised to more stringent criterion which will take effect in January 2006. The groundwater contaminants exceeding the primary MCL in the current sampling included bis(2-ethylhexyl)phthalate, phenol, antimony, manganese and thallium. MCLs continue to define acceptable groundwater concentrations at the Site, however, an exceedance does not necessarily trigger remedial action as long as protectiveness is maintained. These new and revised MCLs do not affect the protectiveness of the remedy because the ESD (September 2001) added institutional controls to the RA, which prohibit the use of groundwater at the Site for any and all current and future purposes, and require the use of the Elyria municipal supply for any potable water uses. These prohibitions were enacted on June 21, 2002 and as such, constitute new location-specific ARARs for the Site. These ARARs serve to enhance the protectiveness of the RA.

### **Surface Water**

The ROD cited the federal AWQCs for the consumption of fish as the ARARs for surface water. Even though only metals (barium, calcium, iron, magnesium, manganese, nickel, vanadium, and zinc) were identified as site-related contaminants in the ROD, it also identified ARARs for organic chemicals. According to the ROD, manganese and mercury exceeded their respective AWQCs, and nickel approached its AWQC. Since the ROD and 1996 five-year review, antimony, zinc, diethylphthalate and bis(2-ethylhexyl) phthalate have undergone revision of their respective surface water criteria to more stringent values, relative to fish consumption.

The ROD cited the federal AWQCs for the protection of aquatic life as an ARAR for surface water. As with the list of AWQCs for the consumption of fish, the AWQCs for the protection of aquatic life includes chemicals which were not identified as site-related in the ROD. The ROD concluded that no exceedances of AWQCs for aquatic life occurred. An ARAR exceedance does not necessarily trigger remedial action, as long as protectiveness is maintained. Since the ROD, new ARARs were developed for total chromium, total lead, total silver, and total zinc. The current AWQCs were also adjusted to reflect hardness. The State of Ohio has also promulgated revised AWQC for several surface water contaminants, however most of these, save for diethylphthalate, are less stringent than Federal criteria. These new and revised AWQC do not affect the protectiveness of the remedy.

While no location-specific and action-specific ARARs were identified in the ROD or first five-year review with respect to surface water, EPA's ESD of September 2001 added institutional controls to the RA. The controls prohibit access to the quarry property and restricts all future use of the property to heavy industrial. No recreational, commercial or residential use of the property is permitted. Further, the ESD provides that the property be secured at all times by the City. These prohibitions were enacted on June 21, 2002 and as such, constitute new location and action-specific ARARs for the Site. These ARARs enhance the protectiveness of the R.A.



## Fish Tissue

The ROD identified no chemical-specific ARARs for fish tissue. However, the AWQCs for the consumption of fish (previously specified in the ARARs for surface water) were ultimately intended to ensure that fish tissue would not contain a harmful amount of contaminants. These criteria for antimony, zinc and two phthalates were revised to more stringent levels as per Table 10. None of these criteria were exceeded for Black River surface water. Quarry surface water and fish tissue sampling will be performed in summer 2003 to determine if these media pose any risks. Protective levels for contaminants in these media must be estimated using risk assessment. As previously discussed, the ESD provisions as enacted by Elyria City Ordinance 2002-119, specifically prohibit recreational use of the quarry such as fishing. This constitutes a location and action-specific ARAR that enhances the protectiveness of the RA.

The ROD identified no chemical-specific ARARs for soil or sediment. Protective levels for contaminants in these media may be assessed using soil screening levels after more recent data are collected in summer 2003.

**Table 10: Changes in Chemical-Specific Standards**

Contaminant	Media	Cleanup Level	Standard		Citation/Year
Methylene Chloride	groundwater	NA	New	5 ug/L	SDWA 1995
Pentachlorophenol	groundwater	NA	New	1 ug/L	SDWA
Arsenic	groundwater	NA	Previous	50 ug/L	SDWA
			New <sup>a</sup>	10 ug/L	SDWA
Antimony	surface water	NA	Previous	4,300 ug/L	AWQC 1998
			New	640 ug/L	AWQC 2002 <sup>c</sup>
Zinc	surface water	NA	Previous	69,000 ug/L	AWQC
			New	26,000 ug/L	AWQC 2002 <sup>c</sup>
Diethylphthalate	surface water	NA	Previous	120,000 ug/L	AWQC 1998
			New	44,000 ug/L	AWQC 2002 <sup>c</sup>
Bis(2-ethylhexyl) phthalate	surface water	NA	Previous	5.9 ug/L	AWQC 1998
			New	2.2 ug/L	AWQC 2002 <sup>b c</sup>

a - The new arsenic MCL will take effect January 23, 2006

b - Criterion was revised to reflect EPA's RfD as stated in IRIS on May 17, 2002, based on 10<sup>-6</sup> risk

c - Criterion refers to protectiveness of human health due to fish consumption

## Changes in Exposure Pathways

The exposure assumptions used to develop the Human Health Risk Assessment included both current exposures (older child trespasser, adult trespasser) and potential future exposures (young and older future child resident, future adult resident and young child and adult park patron). There have been no changes in the toxicity factors for the contaminants of concern that were used in the baseline risk assessment. These assumptions are considered to be conservative and reasonable in evaluating risk and developing risk-based

cleanup levels. The 2001 ESD and adoption of Elyria City Ordinance 2002-119 affects several of the exposure scenarios from the 1998 five-year review due to land use restrictions and access control. These changes would likely reduce the trespasser exposures and would remove the future residential and park patron scenarios altogether. Hence, the potential risks would be much lower than previously stated in the 1998 five-year review risk recalculation.

Although the revisions in AWQC since the last review have become more stringent for these contaminants in Table 10, none of these criteria were exceeded in the Black River samples. Although until the other Site media, i.e., quarry water, quarry sediments, quarry fish and soils are sampled, it is not possible to determine whether site-related risks have increased or decreased; however, the exposure pathway changes would still reduce the given residual risk. No ecological targets were identified during the baseline risk assessment and none were identified during the five-year review, and therefore monitoring of ecological targets is not necessary.

There has been no change to the standardized risk assessment methodology, contaminant toxicity factors or contaminant characteristics that could affect the protectiveness of the remedy.

**Question C: Has any other information come to light that could call into question the protectiveness of the remedy?**

There is no new information that has come to light that could affect the protectiveness of the remedy. The issues that have been raised earlier in this report and listed below in Table 11 do not impact the Site or the remedy.

**Technical Assessment Summary**

According to the sampling data reviewed so far, which includes the Black River surface water and groundwater at the Site, the remedy is functioning as intended by the ROD, as modified by the ESD. The remaining data which will be collected in summer 2003 includes surface water, sediment and fish tissue from the quarry pond, and Site soils. It is not anticipated that the additional sampling will present any data that will be inconsistent with the data provided from the previous review or the conclusions reached from the February 2003 data presented herein. This is because there are no new sources of contamination introduced to the system, the Site physical conditions have not changed since the last review and the Site property access is better restricted under the Elyria City Ordinance # 2002-119.

There is no active treatment process at the Site for any media, hence MCLs that are ARARs for groundwater were exceeded for some contaminants. ARARs for surface water in the Black River have not been exceeded and there is no evidence to indicate that the RSQ Site has impacted the Black River. Until data are collected for the remaining media, it is not possible to determine whether ARARs have been exceeded. The location and action-specific ARARs constituted by the institutional controls at the Site afford better protection by preventing exposures to contaminants altogether, than any chemical-specific ARARs for these media. There have been no changes in toxicity factors and standardized risk assessment methodology that could affect the protectiveness of the remedy. There is no information available that calls into question the protectiveness of the remedy.

## VIII. Issues

The following issues relate to current Site operations and conditions.

**Table 11: Issues**

Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
City of Elyria should schedule and document O&M activities	Y	Y
Biological growth in monitoring well B-4	N	N

## IX. Recommendations and Follow-up Actions

**Table 12: Recommendations and Follow-up Actions**

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
Establish and maintain documentation of O&M activities	O&M activities involving inspection of perimeter fence and signs needs to be scheduled and documented. Provide template to City.	City of Elyria	EPA/OEPA	FY 2004	Y	Y
Biological growth in monitoring well B-4	Reassess well during upcoming Site sampling. Collect biological and groundwater sample.	EPA/OEPA	EPA/OEPA	September 2003	N	N

## **X. Protectiveness Statement**

This five-year review preliminarily concluded that the remedy is protective of human health and the environment in both the short and long term. There are no current exposure pathways to the groundwater contaminants and the quarry sediments under normal circumstances. Further, there are very limited exposure pathways to the quarry water, quarry fish and Site soils due to the institutional controls currently in place at the Site since the ESD of June 2001. A full protectiveness statement will be made when the remaining Site media, i.e., the quarry surface water, sediments, fish tissue and the Site soils, are sampled in July-August 2003 and the results are evaluated with respect to the appropriate human and ecological health criteria.

The data collected and evaluated thus far for this review (groundwater and Black River surface water) indicate that the remedy is currently functioning according to design and is anticipated to remain functional in the future. Significant public health benefits have been achieved thus far by interrupting current and/or potential future exposure pathways such as ingestion and direct contact with contaminated soils, groundwater, quarry fish and surface water.

Operation and maintenance has been effective so far. Evaluation of the effectiveness of the remedy will continue during future five-year reviews until such time that onsite contamination and/or its associated risks are no longer present.

## **XI. Next Review**

The next five-year review for the RSQ Site is required by June 2008, five years from the date of this review.

## **Attachments**

### **Attachment 1 - Site Maps**

- Figure 1 - Site location map
- Figure 2 - 3-dimensional surface terrain model
- Figure 3 - Site feature map
- Figure 4 - Site groundwater monitoring wells
- Figure 5 - Surface water sampling locations
- Figure 6 - Proposed quarry sediment sampling locations
- Figure 7 - Proposed fish sampling locations
- Figure 8 - Proposed soil sampling locations
- Figure 9 - Possible siting for Elyria High School

**Attachment 2** - City of Elyria Declaration of Restrictions, as authorized by Ordinance No. 2002-119

**Attachment 3** - Public Notice announcing start of second Five-Year Review

**Attachment 4** - Business card list and interview summary

**Attachment 5** - List of Documents reviewed for Five-Year Review

**Attachment 6** - Photograph log of February 2003 sampling

**Attachment 7** - Inspection Checklist

**Attachment 8** - Document Repository Inventory

## ATTACHMENT 1

### REPUBLIC STEEL QUARRY SITE MAPS

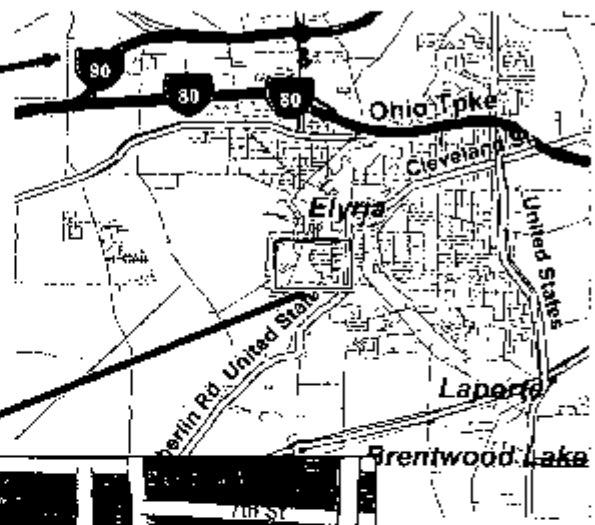
- Figure 1 - Site location map
- Figure 2 - Three-dimensional surface terrain model
- Figure 3 - Site feature map
- Figure 4 - Site groundwater monitoring wells
- Figure 5 - Surface water sampling locations
- Figure 6 - Proposed quarry sediment sampling locations
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## Republic Steel Quarry Site

### 1) State



## 2) Lorain County



### 3) Republic Steel Site



Region 5 Superfund Field

For further information, contact: 1-800-441-1111, ext. 2222 or 2223  
0-4 98 87000 2-757 5441

Figure 1

# Republic Steel Quarry Site 3D Surface Terrain Model

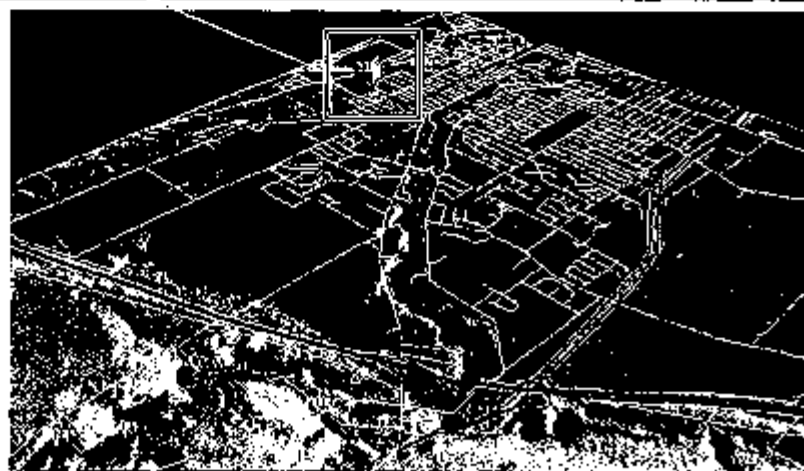
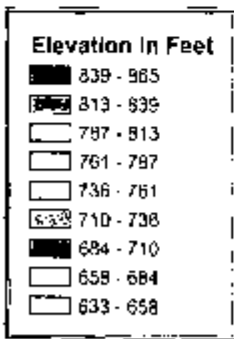


Figure 2

Figure 2: Republic Steel Site

Plot created by David Wilson U.S. EPA Region 5 on 8/18/2000  
BWV Image Date: 8/22/1994

# **Republic Steel Quarry Site Discharge Ditch and Outlet Locations**



BEPA *Region 5 Superfund GEOs*

**Figure 3**

PDF created by Julia H. Prospero, S. EPA Region 5/15/2013  
R & W Image 3/20/1994



# Republic Steel Quarry Site Monitoring Well Locations



SEPA

Region 5 Superfund 16503

Figure 4

Prepared by: J. R. P. / EPA Region 5 / 8/15/2003  
8.8.16 Image 3/20/1994

## Republic Steel Quarry Site Proposed Surface Water Sampling Locations



6EPA Region 5 Superfund GEOS

Figure 5

Prepared by: J. R. P. / J. B. EPA Region 5 / 3/2003  
G & W Image 3/2003

# **Republic Steel Quarry Site Proposed Sediment Sampling Locations**



6EPA Region 5 Superfund GEOS

**Figure 6**

Prepared by: J. R. Prosen, U.S. EPA Region 5  
Date: 10/19/94

**Republic Steel Quarry Site  
Proposed Fish Sampling Gill Net Locations**



**SEPA** U.S. and Canada  
1-800-828-7273 [www.sepa.com](http://www.sepa.com)

### Region 'B' Superfund CEOs

Figure 7

Plot created by J. J. A. R. P. P. U. S. EPA Region 6/15/2003  
R. L. W. J. J. A. R. P. P. U. S. EPA Region 6/15/2003

## Republic Steel Quarry Site Proposed Soil Sampling Locations



EPA Region 5 Superfund CEQS

Figure 8

Prepared by Julie K. Probert U.S. EPA Region 5/52003  
5-4-2003 3/20/03

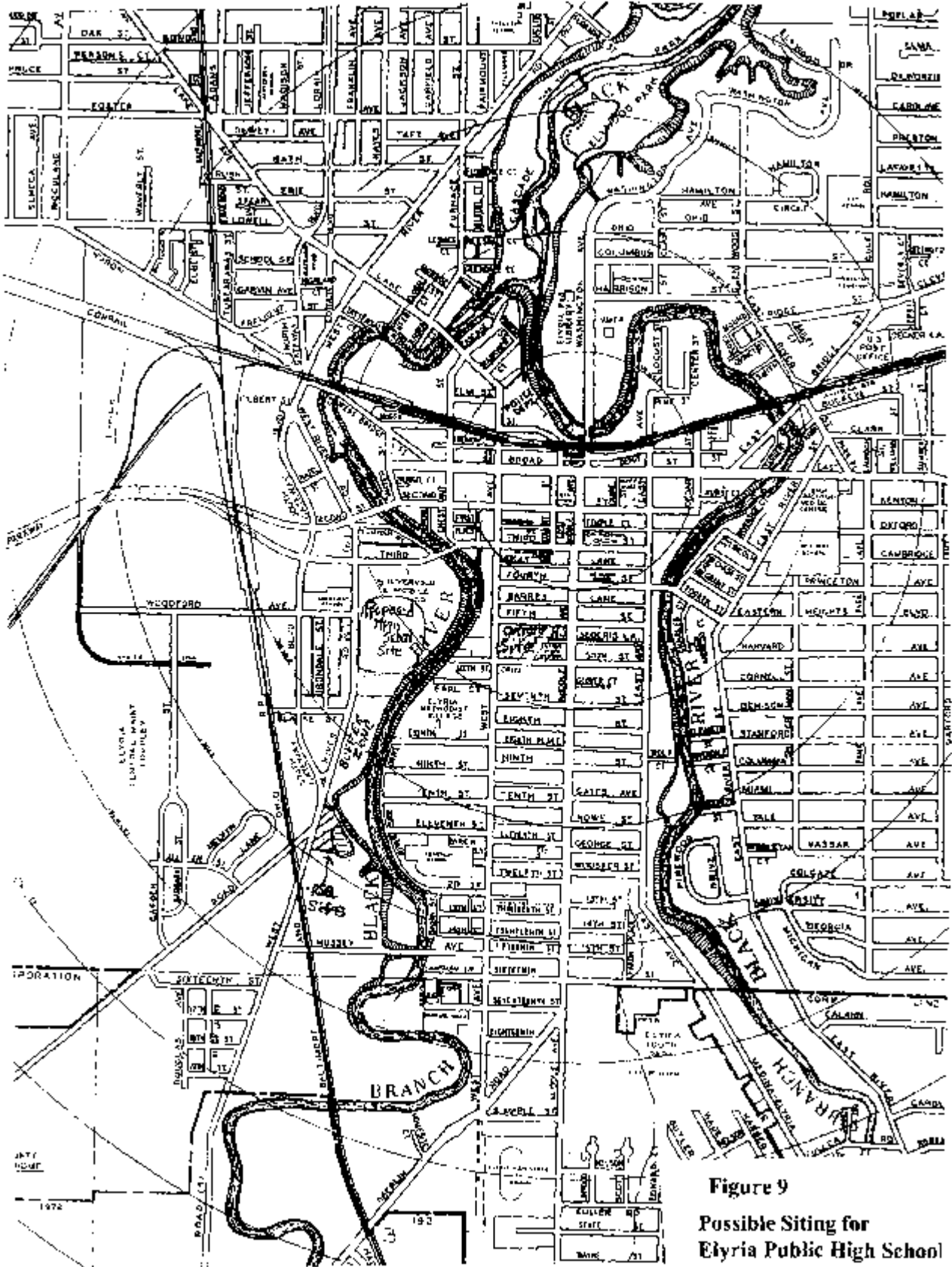


Figure 9  
Possible Siting for  
Elyria Public High School

**ATTACHMENT 2**

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**ASST. LAW DIRECTORS  
& PROSECUTORS**

CYNTHIA M ADAMS

JAY B. GRUNDA

STEPHEN J. GURCHIK

MICHELLE D. NEDWICK

QUENTIN J. NOLAN

MARGARET A. O'BRYON

HONEY ROTHSCHILD

MICHAEL E. SZEKELY

July 25, 2002

Sheila Sullivan  
Remedial Project Manager  
U.S. EPA, Superfund Division  
Region 5  
77 West Jackson Boulevard  
Chicago, Illinois 60604-3590

Attn: SR-6J

Re: Republic Steel Quarry Institutional Controls

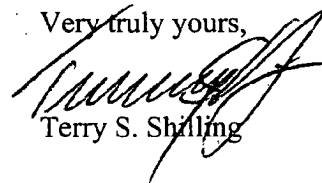
Dear Ms. Sullivan,

Enclosed pursuant to our telephone conversation of Wednesday, July 24, 2002 are the following items:

- 1) Copy of Declaration of Restrictions as recorded by the City of Elyria on Republic Steel Quarry.
- 2) Copy of Ordinance No. 2002-119 authorizing the Mayor to sign the Declaration of Restrictions.
- 3) Copy of Transmittal Letter to Mary Ann Jamison, Loran County Recorder for recording the Declaration of Restrictions.
- 4) Copy of Letter to John Hart, Elyria City Engineer transmitting a copy of Declaration of Restrictions for the Engineering Department.
- 5) Copy of Letter to Gerald Klein, Elyria City Building Inspector transmitting a copy of Declaration of Restrictions for the Building Department.

Please review the enclosed and advise if you need anything further regarding this matter.

Very truly yours,



Terry S. Shilling

TSS/jla  
enclosures

**TERRY S. SHILLING**  
**ELYRIA CITY LAW DIRECTOR**

328 Broad Street  
Elyria, Ohio 44035  
Office (440) 323-5647  
Fax (440) 284-0829

**FAX**

Date: June 20, 2002

Time: \_\_\_\_\_

To: Jerome P. Kujawa  
Assistant Regional Counsel  
U.S. EPA  
77 W. Jackson Blvd.  
Chicago, Illinois 60604-3560

Fax No. 312-886-0747

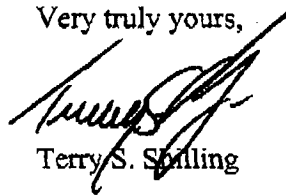
From: Terry S. Shilling, Law Director

RE: Institutional Controls Restricting Use of and Access to the Republic Steel Quarry National Priorities List Superfund Site,  
Elyria, Ohio

Dear Mr. Kujawa,

Enclosed pursuant to your letter of June 13<sup>th</sup>, 2002 is a signed copy of a Declaration of Restrictions regarding the Republic Steel Quarry Site in the City of Elyria. Please review and advise if you have any questions.

Very truly yours,



Terry S. Shilling

TSS/jla  
Enclosure

cc: Sheila Sullivan  
Remedial Project Manager  
U.S. EPA Superfund Division  
77 West Jackson Blvd.  
Chicago, Illinois 60604



We are transmitting 2 pages. If this facsimile is not complete, please call (440) 323-5647.

\*\*\*CONFIDENTIALITY NOTICE\*\*\*

The information contained in this facsimile transmission is attorney/client privileged and confidential information intended only for the use of the individual or entity named above. If the reader of this message is not the intended recipient, you are hereby notified that any disclosure, distribution or copying of this telecopied information is strictly prohibited. If you have received this communication in error, please immediately notify us by telephone and return the original documents to us at the above address via the U.S. Postal Service.

## DECLARATION OF RESTRICTIONS

This Declaration of Restrictions, authorized by Elyria City Ordinance No. 2002-119, is made at Elyria, Ohio, this 21<sup>st</sup> day of June, 2002, by the City of Elyria, Ohio, an Ohio Municipal Corporation, (Declarant).

### Recitals

WHEREAS, Declarant owns real property (**Real Property**) situated in the City of Elyria, County of Lorain, State of Ohio, by and through a Limited Warranty Deed recorded in Volume 1191, page 463 of Lorain County Deed Records. Said real property is more fully described in Exhibit A attached hereto and made a part hereof as if fully rewritten herein; and

WHEREAS, there is contained within said Real Property a four acre sandstone quarry (Quarry) having a water depth of approximately 60'; and

WHEREAS, said Quarry contains contaminated sediments confined to the Quarry bottom and not easily accessed by humans except by fish consumption; and

WHEREAS, humans have on occasion swam and fished in or about said Quarry; and

WHEREAS, the U.S. EPA through a remedial investigation determined that the consumption of fish from said Quarry would be a risk to humans; and

WHEREAS, the U.S. EPA pursuant to the Explanation Of Significant Differences issued September 28, 2001 has determined that it is necessary for the City to restrict public access to said Quarry; and

WHEREAS, Declarant desires to impose certain restrictions, covenants and conditions upon the Quarry and the real property surrounding the Quarry consisting of approximately 12.299 acres, all of which is described in Exhibit B attached hereto and made a part hereof.

NOW, THEREFORE, Declarant for itself and its successors and assigns, hereby enters into this Declaration to impose and create restrictions, covenants and conditions set forth below.

### Prohibition Against Extraction of Ground Water

1. The extraction of ground water located on, in, under or over the real property described in Exhibit A is specifically prohibited for any purpose, potable or otherwise, except for the investigation or remediation of the ground water.

### Requirement for Use of City of Elyria Municipal Water Supply

2. The City of Elyria Municipal Water Supply shall be the sole source of potable water

for any industrial or commercial development or any other public or private use on, in, under or over said real property described in Exhibit A.

#### Public Access

3. Any and all fishing, swimming, boating, public access or use of the Quarry, its sediments and soils is specifically prohibited.

#### Warning signs and fence

4. Whoever owns or has control over the real property described in Exhibit B shall install and maintain signs warning any and all persons to keep off said real property and shall at all times maintain a fence around the perimeter of said real property sufficient to prevent humans from entering onto the real property described in Exhibit B.

#### Permitted Use

5. The zoning use for the real property described in Exhibit B shall be limited to heavy industrial use only and any residential, recreational and commercial use shall be prohibited.

#### Remedies

6. Declarant reserves onto itself the right in case of any violation or breach of any of the restrictions, covenants and conditions in this Declaration, to enter said real property on which the violation or breach exists and to summarily abate and remove, at the expense of the owner, any thing or condition that exists contrary to the intent and meaning of the provisions of this Declaration as determined by Declarant. Declarant shall not, by reason of any action under this paragraph, be deemed guilty of any manner of trespass for the entry, abatement, or removal. Failure of Declarant to enforce any of the restrictions, covenants and conditions contained in this Declaration shall in no event be construed, taken, or held to be a waiver, and Declarant shall at any and all times have the right to enforce this Declaration.

#### Covenants Running With the Land

7. The restrictions, covenants and conditions enumerated in this Declaration shall be deemed as covenants and not as conditions, and shall run with the land and shall bind all owners of all or any part or interest in and to said real property unless and until any change has been approved in writing by the City of Elyria.

#### Constructive Notice

8. All future grantees of any interest in said real property, by acceptance of the deed or other instrument of transfer, shall be deemed to be bound by the terms of this Declaration, whether or not specific reference is made to this Declaration in the deed or instrument of

transfer. It is understood and agreed that the restrictions, covenants and conditions are part of an overall prohibition on said real property as a whole, and upon the recording of this Declaration shall be constructive notice to any future owner or owners of any interest in said real property of the terms of this Declaration.

In Witness Whereof, this Declaration of Restrictions has been executed by William M. Grace, Mayor, City of Elyria, this 21<sup>st</sup> day of June, 2002

CITY OF ELYRIA

By: [Signature]  
William M. Grace, Mayor

Rebecca Stewart  
Rebecca Stewart  
Print Name

DeAnna Frye  
DeAnna Frye  
Print Name

State of Ohio )  
SS  
County of Lorain )

The foregoing instrument was acknowledged before me this 21<sup>st</sup> day of June, 2002, by William M. Grace, Mayor, City of Elyria

[Signature]  
Notary Public

This Instrument Prepared and Approved by:  
Terry S. Shilling, Law Director, City of Elyria  
Elyria, Ohio  
(440) 323-5647

JEAN ANDERSON, Notary Public  
State of Ohio  
My Commission Expires January 24, 2005

[Signature]  
Terry S. Shilling, Law Director

**EXHIBIT A**

Situated in the City of Elyria, County of Lorain, State of Ohio and being known as part of Original Elyria Township Lots Numbers 8, 115, 116, and 117, West of the Black River and bounded and described as follows:

Beginning at a spike found set at the intersection of the centerline of West River Street and the centerline of Infirmary Road,

Thence South  $16^{\circ}25'40''$  West in the centerline of West River Street, a distance of 393.80 feet to a spike set;

Thence South  $89^{\circ}53'40''$  East, a distance of 34.36 feet to a point in the easterly sideline of West River Street; said point is the principal place of beginning;

Thence continuing South  $89^{\circ}53'40''$  East and in a line parallel to and six (6) feet distant northerly from an existing fence, a distance of 451.97 feet to a point;

Thence South  $29^{\circ}18'40''$  East in a line parallel to and six (6) feet distant northeasterly from an existing fence, a distance of 188.75 feet to an iron pin set;

Thence North  $81^{\circ}45'20''$  East, a distance of 197.43 feet to an iron pin set;

Thence North  $46^{\circ}04'20''$  East, a distance of 232.61 feet to a point in the easterly line of land conveyed to the Elyria Iron and Steel Company as recorded in Deed Volume 158, Page 398 of the Lorain County Deed Records; said line passes through an iron pin set 65.21 feet southwesterly from said easterly line;

Thence North  $22^{\circ}41'20''$  West in the easterly line of land so conveyed to the Elyria Iron and Steel Company, said line being the easterly line of land now or formerly owned by Republic Steel Corporation, a distance of 614.83 feet to a lower northeasterly corner of land so conveyed to the Elyria Iron and Steel Company;

Thence North  $89^{\circ}54'20''$  West in a lower northerly line of land so conveyed to the Elyria Iron and Steel Company, a distance of 45.00 feet to a point in the high water mark of the west bank of the westerly branch of the Black River;

The following 8 courses are in the high water mark of the Black River and at the easterly line of land now or formerly owned by Republic Steel Corporation and in the easterly line of a parcel conveyed to the Elyria Iron and Steel Company, recorded aforesaid;

Thence North  $27^{\circ}20'43''$  West, a distance of 136.26 feet to a point;

Thence North  $19^{\circ}32'27''$  East, a distance of 144.45 feet to a point;

Thence North  $19^{\circ}39'26''$  West, a distance of 53.76 feet to a point;

Thence North  $21^{\circ}37'04''$  East, a distance of 228.55 feet to a point;

Thence North  $7^{\circ}22'17''$  East, a distance of 159.15 feet to a point;

Thence North  $15^{\circ}23'40''$  East, a distance of 325.55 feet to a point;

Thence North  $26^{\circ}36'43''$  East, a distance of 276.02 feet to a point;

Thence North  $38^{\circ}40'34''$  East, a distance of 129.15 feet to a point in the northerly line of Original Lot 115;

Thence North  $89^{\circ}04'20''$  West in the northerly line of Original Lot 115, a distance of 402.96 feet to an iron pin found set in the easterly sideline of West River Street; said point being South  $89^{\circ}04'20''$  East, a distance of 33 feet from a spike found set at an angle point in the centerline of West River Street; said line passes through an iron pin set about 399 feet off the centerline of West River Street;

Thence South  $0^{\circ}12'45''$  West, a distance of 4.29 feet to a point;

Thence South  $16^{\circ}25'40''$  West, a distance of 399.55 feet to a point;

Thence South  $73^{\circ}34'20''$  East, a distance of 27.00 feet to a point;

Thence South  $16^{\circ}25'40''$  West, a distance of 20.00 feet to a point;

Thence North  $73^{\circ}34'20''$  West, a distance of 27.00 feet to a point;

Thence South  $16^{\circ}25'40''$  West, a distance of 768.00 feet to a point;

Thence South  $30^{\circ}09'49''$  East, a distance of 50.93 feet to a point;

Thence South  $16^{\circ}25'40''$  West, a distance of 20.00 feet to a point;

Thence North  $73^{\circ}34'20''$  West, a distance of 37.00 feet to a point;

Thence South  $16^{\circ}25'40''$  West, a distance of 296.99 feet to a point;

Thence South  $73^{\circ}34'20''$  East, a distance of 12.00 feet to a point;

Thence South  $16^{\circ}25'40''$  West, a distance of 10.00 feet to a point;

Thence North  $73^{\circ}34'20''$  West, a distance of 12.00 feet to a point;

Thence South  $16^{\circ}25'40''$  West, a distance of 247.00 feet to a point;

Thence South  $73^{\circ}34'20''$  East, a distance of 12.00 feet to a point;

Thence South  $16^{\circ}25'40''$  West, a distance of 10.00 feet to a point;

Thence North  $73^{\circ}34'20''$  West, a distance of 12.00 feet to a point;

Thence South  $16^{\circ}25'40''$  West, a distance of 228.35 feet to the principal place of beginning;

Containing within said bounds 20.813 acres of which about 3.780 acres are in Original Lot 8, about 8.278 acres are in Original Lot 115, about 2.092 acres are in Original Lot 116, and about 6.663 acres are in Original Lot 117, to be the same more or less, but subject to all legal highways, as surveyed by Kleinoeder-Schmidt and Associates in July, 1977.

Sponsored by:

SAFETY:  
H. Larkins  
L. Tanner

ORDINANCE NO. 2002- 119

AN ORDINANCE AUTHORIZING THE MAYOR TO SIGN A DECLARATION OF RESTRICTIONS REGARDING THE REPUBLIC STEEL QUARRY SITE AND REPEALING ORDINANCE NO. 2001-176.

WHEREAS, the City of Elyria is the owner of the Republic Steel Quarry Site (Quarry Site) on Mussey Avenue which Quarry Site has been listed as an NPL Site by the USEPA and is described in Exhibit A attached hereto and made a part hereof; and

WHEREAS, the USEPA is in the process of preparing an explanation of significant difference as part of the process of delisting said Quarry Site as an NPL site; and

WHEREAS, the USEPA has requested that the City of Elyria institute controls and deed restrictions to protect human health including but not limited to prohibiting the ground water at said Quarry Site as a source of drinking water and requiring the use of the City of Elyria Municipal Water Supply as the sole source of potable water for any industrial or commercial development or public use on said Quarry Site.

BE IT ORDAINED BY THE COUNCIL OF THE CITY OF ELYRIA, STATE OF OHIO:

SECTION 1 That the Mayor be and he hereby is authorized to sign a Declaration of Restrictions for and relating to said Republic Steel Quarry Site, which Declaration of Restrictions shall include but not be limited to the following:

- a) Prohibition against Extraction of Ground Water;
- b) Requiring the use of the City of Elyria Municipal Water Supply upon said real property.
- c) Prohibiting public access
- d) The erection of Warning Signs and Fences

Any other deed restrictions which the United States Environmental Protection Agency (USEPA) or the City of Elyria shall deem necessary and appropriate. Said Declarations shall be recorded at the Lorain County Recorder's Office to run with the land, and shall be in form and substance and approved by the Elyria City Law Director and shall be recorded after the

I HEREBY CERTIFY THAT THIS IS AN EXACT AND TRUE COPY OF Ord 2002-119

6-2-02 DATE  
Arthur J. Weber CLERK OF COUNCIL  
CITY OF ELYRIA, OHIO

City of Elyria receives approval from the USEPA.

SECTION 2: This Ordinance hereby repeals Ordinance No. 2001-176 and any other ordinances or portions thereof which may be inconsistent herewith.

SECTION 3: That it is found and determined that all formal actions of this Council concerning and relating to the passage of this Ordinance were taken in meetings open to the public, in compliance with Ohio law.

SECTION 4: That this Ordinance shall take effect and be in force from and after the earliest period allowed by law.

PASSED: 6/3/02 Thomas O. Shores  
Thomas O. Shores, President

ATTEST: Arthur J. Weber APPROVED: 6/3/02  
Arthur J. Weber, Clerk

William M. Grace  
William M. Grace, Mayor

DATE: 6-4-02

Approved as to form

Terry S. Shilling  
Terry S. Shilling, Law Director

#### CERTIFICATE OF PUBLICATION

I, THE UNDERSIGNED CLERK OF COUNCIL OF THE CITY OF ELYRIA, OHIO, HEREBY CERTIFY THAT THE FULL TEXT OF THE FOREGOING ORDINANCE NO. 2002- 119 WAS POSTED IN THREE PLACES WITHIN THE CITY AS DETERMINED BY COUNCIL. AND THAT SUCH PLACES WERE AS FOLLOWS: CITY HALL, CENTRAL FIRE STATION AND THE POLICE STATION.

DATED 6/4/02 Arthur J. Weber  
CLERK OF COUNCIL  
-CITY OF ELYRIA, OHIO

Date presented to the Mayor: 6/4/02



**EXHIBIT B**  
**Former Republic Steel Quarry**

**LEGAL DESCRIPTION**

Situated in the City of Elyria, County of Lorain, State of Ohio and known as being part of Original Elyria Township Lots Number 8, 115, 116 and 117, West of the Black River and bounded and described as follows:

Commencing at a spike found set at the intersection of the centerline of WEST RIVER ROAD (S) (66 foot right of way) and INFIRMARY ROAD (60 foot right of way); thence S 16° 25' 40" W along the centerline of said WEST RIVER ROAD (S), a distance of 393.00 feet to a spike set; thence S 89° 55' 40" E, a distance of 34.36 feet to a point on the easterly right of way limits of said WEST RIVER ROAD (S); said point being the true place of beginning;

Thence continuing S 89° 55' 40" E and being in a line parallel to and six (6) foot perpendicular with an existing fence, a distance of 451.97 feet to a point;

Thence S 29° 14' 40" E and being in a line parallel to and six (6) foot perpendicular with an existing fence, a distance of 168.75 feet to an iron pin;

Thence N 81° 45' 20" E, a distance of 197.43 feet to an iron pin;

Thence N 46° 04' 20" E, a distance of 232.61 feet to an angle point;

Thence N 22° 41' 20" W, a distance of 614.83 feet to an angle point;

Thence N 89° 54' 20" W, a distance of 45.00 feet to a point;

Thence N 27° 20' 43" W, a distance of 136.26 feet to a point;

Thence N 60° 59' 14" W, a distance of 331.44 feet to a point on the easterly right of way of WEST RIVER ROAD (S);

Thence S 16° 25' 40" W along the easterly right of way of said WEST RIVER ROAD (S), a distance of 82.00 feet to an angle point;

Thence S 30° 09' 49" E continuing along the easterly right of way of said WEST RIVER ROAD (S), a distance of 50.93 feet to an angle point;

Thence S 16° 25' 40" W continuing along the easterly right of way of said WEST RIVER ROAD (S), a distance of 20.00 feet to an angle point;

Thence N 73° 34' 20" W along the easterly right of way of said WEST RIVER ROAD (S), a distance of 37.00 feet to an angle point;

## Former Republic Steel Quarry Boundary

Thence S 16° 25' 40" W continuing along the easterly right of way of said WEST RIVER ROAD (S), a distance of 296.99 feet to an angle point;

Thence S 73° 34' 49" E continuing along the easterly right of way of said WEST RIVER ROAD (S), a distance of 12.00 feet to an angle point;

Thence S 16° 25' 40" W continuing along the easterly right of way of said WEST RIVER ROAD (S), a distance of 10.00 feet to an angle point;

Thence N 73° 34' 49" W continuing along the easterly right of way of said WEST RIVER ROAD (S), a distance of 12.00 feet to an angle point;

Thence S 16° 25' 40" W continuing along the easterly right of way of said WEST RIVER ROAD (S), a distance of 247.00 feet to an angle point;

Thence S 73° 34' 20" W continuing along the easterly right of way of said WEST RIVER ROAD (S), a distance of 12.00 feet to an angle point;

Thence S 16° 25' 40" W continuing along the easterly right of way of said WEST RIVER ROAD (S), a distance of 10.00 feet to an angle point;

Thence N 73° 34' 49" W continuing along the easterly right of way of said WEST RIVER ROAD (S), a distance of 12.00 feet to an angle point;

Thence S 16° 25' 40" W continuing along the easterly right of way of said WEST RIVER ROAD (S), a distance of 228.35 feet to the true place of beginning and containing 12.299 acres of which about 3.780 acres are in Original Lot 8, about 0.022 acres are in Original Lot 115, about 1.834 acres in Original Lot 116 and about 6.663 acres in Original Lot 117, to be the same more or less, but subject to all legal highways.



**LAW DIRECTOR**

TERRY S. SHILLING

**THE CITY OF ELYRIA, OHIO**

OFFICE OF LAW DIRECTOR

CITY HALL

328 BROAD STREET

ELYRIA, OHIO 44035

PHONE: (440) 323-5646

FAX: (440) 284-0829

**ASST. LAW DIRECTORS  
& PROSECUTORS**

CYNTHIA M ADAMS

JAY B. GRUNDA

STEPHEN J. GURCHIK

MICHELLE D. NEDWICK

QUENTIN J. NOLAN

MARGARET A. O'BRYON

HONEY ROTHSCHILD

MICHAEL E. SZEKELY

July 25, 2002

Mary Ann Jamison  
Lorain County Recorder  
Lorain County Administration Building  
226 Middle Avenue  
Elyria, Ohio 44035

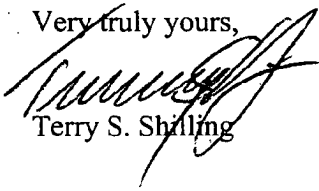
Re: City of Elyria Declaration of  
Restrictions

Dear Ms. Jamison,

Enclosed for recording in Lorain County Records is a Declaration of Restrictions by the City of Elyria for its Republic Quarry Site.

Please review and advise if you need anything further to record this document.

Very truly yours,

  
Terry S. Shilling

TSS/jla

enclosure

## ATTACHMENT 3



### **EPA To Review Republic Steel Quarry Superfund Site Elyria, Ohio**

### **Comments Invited**

The U.S. Environmental Protection Agency (EPA) is beginning a five-year review for the Republic Steel Quarry Superfund Site. The Superfund law requires that regular reviews be conducted (at least every 5 years) on sites where the cleanup is finished, but low levels of hazardous waste remain. These reviews are done to ensure that the cleanup continues to protect people and the environment. This is the second such review for the Republic Steel Quarry Site. EPA completed the first five-year review for the Site in September 1998.

The cleanup actions that EPA selected are documented in the 1988 Record of Decision. They included:

- removing about 190 cubic yards of contaminated soil
- identifying what species of fish live in the quarry and Black River
- determining if the fish have been contaminated by the Site
- resampling the groundwater at the Site
- placing a fence and warning signs around the Site

As a result of the first five-year review, the remedy was expanded to include:

- fixing and inspecting the fence and signs regularly
- restrictions on the land use
- regular groundwater monitoring

During the upcoming review, EPA together with the Ohio Environmental Protection Agency, will collect samples from the Site and review any new information that will help to determine how well the cleanup is working and whether additional cleanup actions are needed. EPA invites you to provide us with information that you think might be important in this five-year review. Please provide your input or direct questions to:

Sheila Sullivan  
Remedial Project Manager  
U.S. EPA  
77 W. Jackson Blvd., SR-6J  
Chicago, IL 60604  
312-886-5251  
[sullivan.sheila@epa.gov](mailto:sullivan.sheila@epa.gov)

OR

Zenny Sadlon  
Community Involvement Coordinator  
U.S. EPA  
77 W. Jackson Blvd., P-19J  
Chicago, IL 60604  
1-800-621-8431, ext. 66682  
[sadlon.zenny@epa.gov](mailto:sadlon.zenny@epa.gov)

The Five-Year Review Report will be completed by October 2003 and will be available for review with the other Site-related documents in the Site Information Repository at the Elyria Public Library, 320 Washington Avenue, Elyria, Ohio 44035.

## ATTACHMENT 4 COMMUNITY INTERVIEWS



**Craig Sampson**  
Division of Engineering

Elyria City Hall  
328 Broad St.  
Elyria, OH 44035

City Hall  
440-322-5464  
Fax: 440-322-1439  
E-Mail: [cengineer@alltel.net](mailto:cengineer@alltel.net)

### City of Elyria, Ohio

**Terry S. Schilling**  
Law Director

City Hall  
328 Broad Street  
Elyria, Ohio 44035

Phone: (440) 323-5646  
Fax: (440) 284-0829  
[tss@elyriamunicourt.org](mailto:tss@elyriamunicourt.org)



### City of Elyria, Ohio

**Eric J. Rothgery**  
Safety Service Director

328 Broad Street  
Elyria, Ohio 44035

440 322-0926 VOICE  
440 322-5956 FAX  
440 322-5388 TTD/TTY  
[erothgery@cityofelyria.com](mailto:erothgery@cityofelyria.com)

**MAVERICK**

Demand The Brand

Maverick Tube Corporation

**John Lescher**  
Supervisor of Industrial Relations

525 Mussey Avenue  
P.O. Box 329  
Elyria, OH 44035  
[www.maverick-tube.com](http://www.maverick-tube.com)

440-284-1214  
Fax 440-284-1235  
[jlescher@maverick-tube.com](mailto:jlescher@maverick-tube.com)

### The Elyria Schools

TO ENSURE THAT EACH CHILD  
REACHES HIS OR HER FULL POTENTIAL



LEARNING FROM EACH OTHER

**Richard P. Nielson**  
Director, Business Services

42101 Griswold Road  
Elyria, Ohio 44035  
(440) 284-8206 • FAX (440) 284-8058  
e-mail: [nielsonrichard@elyriaschools.k12.oh.us](mailto:nielsonrichard@elyriaschools.k12.oh.us)

### INDEPENDENT CITIZENS COMMITTEE

The mission of the Independent Citizens Committee (ICC) is to engage the citizens of the Elyria Public School District in investigating and evaluating the Elyria High School issue in its entirety. We look to gain the confidence of the community and will ensure their best interests as we report our findings to the Elyria Board of Education.

[www.elyriaicc.org](http://www.elyriaicc.org)  
(440) 366-4173

## **ATTACHMENT 4**

### **Summary of Community Interviews**

A site inspection and community interviews were conducted on May 7, 2003 by RPM Sheila Sullivan and OEPA Site Coordinator, Joseph Trocchio. The first discussion took place at the Maverick Tube Corporation facility, prior to the site inspection. The Director of Industrial Relations from Maverick Tube Corporation, John Lescher was present, as well as Terry Schilling of the City of Elyria Solicitor's Office and Craig Sampson from the City Engineering Department.

Mr. Lescher discussed the history of the Maverick Tube facility and answered specific questions regarding the plant operations, employee activity patterns with respect to the RSQ Site, perceptions about the RSQ Site, safety issues and other related concerns. He indicated that Maverick Tube Corporation purchased all five remaining LTV Steel manufacturing facilities in January 1, 2003. The Elyria plant is one of four remaining facilities still operating of the 21 plants owned originally purchased from LTV. About 60% of the plant's product is used for rigid conduit for hospitals and other facilities. The remaining 30% has mechanical uses, namely steel tubing for machinery and axles for General Motors.

At the Elyria facility, 55 hourly and 13 salaried employees work five days per week during one of two possible shifts. Hence, the plant is operated over a 24-hour day and is locked down on weekends and holidays. The average length of employment at the facility is 30 years, hence, most employees are aware of the RSQ Site and its history. Most of the employees live outside of Elyria, in the nearby cities of Oberlin or Grafton. The facility makes no use of the quarry property and cooperates with the City of Elyria regarding Site security. The plant maintains the southern fence line adjacent to the plant and has a key to the gate for maintenance purposes. Mr. Lescher indicated that the plant employees perceive the quarry as generally pristine and are not concerned with its status. To reduce any employee anxieties regarding the facility's viability and job security, the management informs the employees when sampling is scheduled for the RSQ property.

The interviews with the City representatives covered many areas. We learned that the City does not anticipate new industries in the area, and no development inquiries have been made with regard to the Site. The population demographics and water requirements have not changed drastically. The population of Elyria decreased by 1,000 residents as per the last census. This was attributed to, closure of a large manufacturing facility which employed about 800 people. Any growth has occurred in the area southeast of the City. The water supply has been stable. Since 1999, Mayor Grace has presided over Elyria, and several appointments and municipal jobs have shifted. The new safety services staff includes Messrs. Eric Rothgery and Jim Hutchinson. As per the RPM's request, an updated listing of City personnel was provided and is included as part of this attachment.

There has been no community interest or discussion about the Site that any of the interviewees could recall. Since the passage of City Ordinance No. 2002-119, there has been no feedback or comment from the community. Further, no events such a vandalism or trespassing have been evident. The RSQ Site area is patrolled as needed and the security measures authorized under Ordinance No. 2002-119 are being adhered to. City representatives indicated that they had never seen anyone fishing in the quarry, but there have been isolated incidents of people swimming and recreating at the quarry. The West Branch of the Black River, adjacent to the Site, is not used for fishing, hunting or swimming. These activities do occur further north of the Site at recreational areas such as Cascade and Elmwood parks, at the confluence of the west and east branches of the Black River.

Another issue raised by EPA concerned the City's lack of documentation regarding Site security activities and the scheduling of Site security inspections. While such documentation would assist with future O&M planning, it may also be a prudent undertaking for the City with respect to future liability concerning the quarry. This issue was the subject of discussion later in the afternoon at the offices of Messrs. Rothgery and Sampson. The City agreed to explore Site security documentation further. The RPM will follow up by sending an O&M template form which can be adapted by the City.

The last meeting was held with Richard Nielson, Director of Business Services for the Elyria Schools. Mr. Nielson had also arranged for two members of the Elyria Schools Independent Citizen's Committee (ICC) to be present. The EPA RPM and OEPA Site Coordinator had been following the issue of the Elyria School District's proposal to expand the senior high school capacity, as it is a potential Site-related issue which supported the need for the current land use restrictions and institutional controls. The expansion would be achieved by either by enlarging the present facility in the vicinity of the RSQ Site, or by building a completely new facility at another location. The current high school facility is located on the east side of the west branch of the Black River at 6<sup>th</sup> Street and Middle Avenue (see Figure 9). There is only one public high school in Elyria, which serves about 2,000 students. The Elyria Board of Education established a broad-based citizen's committee (ICC) to study the school siting issues and to formulate recommendations to the Board by June 2003, in order for a referendum to be placed on the November ballot.

If the school is to be expanded into the 48-acre parcel between 3<sup>rd</sup> and Mussey Streets (across the west branch and just north of the RSQ Site), a sizeable buffer zone would be required to facilitate ingress and egress from the new school. This would necessitate locating the school property at least 2,100 feet north of the RSQ Site. Mr. Nielson felt that it was unlikely that this location would be recommended to the Board due to its small size. Further, although the Site is delisted and poses minimal risks from Site contaminants, public perceptions about the Site are generally negative. The RPM indicated to the members that given this additional information regarding the buffer zone, the agencies did not have any concerns with respect to any potential siting recommendations near the current location.

The RPM visited the Elyria Public Library. Reference Section, 320 Washington Avenue in Elyria to inventory the documents in the Site repository. As mentioned, the reference librarian indicated that the documents are rarely consulted. The documents present are listed in Attachment 8.



## ATTACHMENT 4



### MAYOR'S OFFICE

## City of Elyria--Directory of Telephone Numbers

Information-City Offices	322-0926
or TTY-TDD	322-5388
Animal Warden (Police Department)	323-3302
Auditor-Ted M. Pileski	322-4024
Building Department	322-1925
Cemeteries Division	322-3896
Central Maintenance Garage	323-3184
City Council-Clerk's Office	322-7269
Civil Service Commission	323-7948
Communications Division	322-3329
Community Development	322-3900
Engineering Division, John Hart	322-5464
FIRE DEPARTMENT	911
Fire Chiefs Office, John Zielinski	322-1024
Fire Prevention Bureau	323-1027
Fire Station No. 1 - 40 Cedar Street	323-4815
Fire Station No. 2 - 330 E. Broad Street	322-6107
Fire Station No. 3 - 855 Lorain Blvd.	322-4170
Fire Station No. 4. 609 Abbe Road N.	365-6050
Health Department, Kathy Boyland	323-7595
Income Tax Department	322-2550
Mayor's Office - William M. Grace	322-1829
Municipal Court-Clerk of Courts Donald J. Rothgery	323-1328
Judge George Ferguson	323-6545
Judge John R. Musson	323-4903
Office of Equal Opportunity	322-5388
Parks and Recreation-Main Office	365-7101
East Park Recreation Center,	322-3028

West Park CR Hoagland Center,	323-7755
POLICE DEPARTMENT	911
Police Department Information	322-2241
Elyria City Jail Information	326-1325
Police Chiefs Office, Michael Medders	326-1200
Detective Bureau	322-1926
Narcotics Division	322-7264
Records Division	322-1827
Youth Bureau	322-3465
Crime Prevention	323-1144
DARE Program	323-3273
Safety-Town	323-1144
Prenatal Clinic-Health Department	323-7595
Prosecutor's Office	323-5647
Public Utilities Office--Customer Service	323-1330
Safety-Service Director, Eric Rothgery	322-0926
Sanitation Department	322-3895
Solicitor's Office-Terry S. Shilling	323-5647
Street Department	322-3129
Traffic Lights--Communications	322-3329
Utilities Office-Customer Service--City Hall	323-1330
Water Distribution	322-2927
Water Pumping Plant	244-4310
Wastewater Pollution Control Plant	366-2211
Pretreatment Division	366-2211
Sewers	366-2211
Report a Polluter	366-2211

## ATTACHMENT 5

### List of Documents Reviewed

Agency for Toxic Substances and Disease Registry (ATSDR). 1988. *A Preliminary Health Assessment for Republic Steel Quarry*. January 13, 1989.

CH2M Hill. 1988. *Final Phase I Remedial Investigation Report for Republic Steel Quarry, Elyria, Ohio*. REM IV, Zone II. August 26, 1988.

CH2M Hill. 1987. Three Previous Site Safety Plans for the RSQ Superfund Site.

CH2M Hill. 1990. *Final Supplemental Report for Republic Steel Quarry, Elyria, Ohio*. REM IV, Zone II. September 26, 1990.

City of Elyria. Correspondence from Terry S. Schilling, Law Director, to U.S. EPA RPM, Sheila Sullivan containing Declaration of Restrictions (Ordinance # 2002-119) for land use and controls at the Republic Steel Quarry Superfund Site (July 25, 2002).

Clement Associates, Incorporated 1989a. *Republic Steel/South Boat Launch Cleanup Goals*. January 30, 1989.

Clement Associates, Incorporated. 1989b. *Cleanup Goals for Republic Steel Quarry Site*. February 2, 1989.

Environmental Design International, Inc. (EDI), April 17, 2003. Correspondence from Patricia Feeley, STAT Project Manager, to Sheila Sullivan, U.S. EPA RPM, containing field log and photo documentation of February 2003 sampling.

Ohio Environmental Protection Agency (OEPA). 1993. *Ohio Water Quality Standards*. Chapter 3745-1 of the Administrative Code.

Ohio Environmental Protection Agency, September 18, 1989. Transmittal Letter from Davis Strayer (OEPA) to Lois Betka (U.S. EPA) of signed State-Superfund Contract for Funding to Initiate Remedial Action at the Republic Steel Quarry Site.

Ohio Environmental Protection Agency, October 5, 1998. Transmittal Letter from Laura Fay (OEPA) to Betty Campbell (U.S. EPA) of signed Reconciliation and Termination Agreement of the State-Superfund Contract, Republic Steel Quarry Site.

REM IV Team. c. 1988., *Revised Endangerment Assessment. Republic Steel Quarry, Elyria, Ohio*.

United States Environmental Protection Agency (U.S. EPA). 2001. *Operation and Maintenance in the Superfund Program*. Office of Solid Waste and Emergency Response. OSWER 9200.1-37FS, EPA 540-F-01-004.

United States Environmental Protection Agency (U.S. EPA). 1996a. *Soil Screening Guidance: Technical Background Document*. Office of Solid Waste and Emergency Response. EPA/540/R-95/128.

United States Environmental Protection Agency (U.S. EPA). 1996d. *Drinking Water Regulations and Health Advisories*. Office of Water. Washington, D.C.

United States Environmental Protection Agency (U.S. EPA). 1993. *Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons*. Office of Research and Development. Washington, D.C. EPA/600/R-93/089 July 1993.

United States Environmental Protection Agency (U.S. EPA). 1992f. *Water Quality Standards*. 40 Code of Federal Regulations, Part 131.

United States Environmental Protection Agency (U.S. EPA). 1988. *Record of Decision for Republic Steel Quarry, Elyria, Ohio*. September 1988.

United States Environmental Protection Agency (U.S. EPA). 1986. *Quality Criteria for Water (with 1987, /995, 2002 updates)*. EPA 440/5-86-00, EPA-822-R-02-047, EPA-822-R-02-012.

United States Environmental Protection Agency (U.S. EPA). *Comprehensive Five Year Review Guidance*, June 2001. Office of Solid Waste and Emergency Response. OSWER Directive 9355.7-03B-P.

United States Environmental Protection Agency (U.S. EPA). *Institutional Controls: A Site Managers Guide to Identifying, Evaluating and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups*", September 2000. Office of Solid Waste and Emergency Response. OSWER Directive 9355.0-74FS-P, EPA 540-F-00-005.

United States Environmental Protection Agency (U.S. EPA) Region 5. Chicago, Illinois. *Explanation of Significant Differences for the Republic Steel Quarry Superfund Site, Elyria Ohio*. September 28, 2001

United States Environmental Protection Agency (U.S. EPA), Federal Register, Notice of Intent to Delete, Notice of Deletion, Republic Steel Quarry Superfund Site, Elyria, Ohio. September 12, 2002.

Roy F. Weston, Inc. (WESTON). 1996. *Quality Assurance Project Plan. Republic Steel Quarry Site, Five-Year Review, Elyria, Ohio*. USEPA Contract No. 68-W8-0089, EPA 540-R-01-007

Roy F. Weston, Inc. (WESTON). May 1987. Groundwater Quality Assessment Plan Phase 2, General Motors Corporation-Fisher Guide Division, Elyria Ohio., W.O. # 1138-32-02.

Roy F. Weston, Inc. (WESTON). 1998. *Five-Year Review Report, Republic Steel Quarry Site, Elyria, Ohio*. U.S. EPA Contract No. 68-W8-0089.

**ATTACHMENT 6**

**PHOTOGRAPH LOG**

Second Five-Year Review Sampling  
Republic Steel Quarry Site

February 25-27, 2003



PHOTOGRAPH LOG

<b>Project Name</b>	<i>Republic Steel Corp Quarry, Elyria, Ohio - USEPA Region V</i>
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<p><i>Project: 1131.003</i> <i>Date: 2/25/03</i> <i>Photographed By:</i> <i>Hilary Janousek</i></p> <p><i>Description:</i> <i>View of well</i> <i>development activities</i> <i>at Monitoring Well</i> <i>#1, sample B-1 GW-1,</i> <i>as viewed from the</i> <i>west.</i></p> <p><b>PHOTO #1</b></p>	
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<p><i>Project: 1131.003</i> <i>Date: 2/25/03</i> <i>Photographed By:</i> <i>Hilary Janousek</i></p> <p><i>Description:</i> <i>View of well</i> <i>development activities</i> <i>at Monitoring Well</i> <i>#2, sample B-2 GW-2,</i> <i>as viewed from the</i> <i>east.</i></p> <p><b>PHOTO #2</b></p>	
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## PHOTOGRAPH LOG

<b>Project Name</b> Republic Steel Corp. Quarry, Elyria, Ohio - USEPA Region V	
<b>Project:</b> 1131.003 <b>Date:</b> 2/25/03 <b>Photographed By:</b> Hilary Janousek	
<b>Description:</b> View of well development activities at Monitoring Well #3, sample B-3 GW-3, as viewed from the south.	
PHOTO #3	
<b>Project:</b> 1131.003 <b>Date:</b> 2/26/03 <b>Photographed By:</b> Hilary Janousek	
<b>Description:</b> View of well development activities at Monitoring Well #5, sample B-5 GW-5, as viewed from the north. Manual bailers were implemented because the submersible pump malfunctioned.	
PHOTO #4	

PHOTOGRAPH LOG

Project Name	Republic Steel Corp. Quarry, Elyria, Ohio - USEPA Region V
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<p>Project: 1131.003 Date: 2/25/03 Photographed By: Hilary Janousek</p> <p>Description: View of well development activities at Monitoring Well #7, sample B-7 GW-7, as viewed from the north.</p> <p>PHOTO #5</p>	
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<p>Project: 1131.003 Date: 2/25/03 Photographed By: Hilary Janousek</p> <p>Description: View of well development activities at Monitoring Well #8, sample B-8 GW-8, as viewed from the north.</p> <p>PHOTO #6</p>	
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**PHOTOGRAPH LOG**

<b>Project Name</b>	<i>Republic Steel Corp. Quarry, Elyria, Ohio - USEPA Region V</i>
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<b>Project:</b> 1131.003 <b>Date:</b> 2/27/03 <b>Photographed By:</b> <i>Hilary Janousek</i>	
<b>Description:</b> <i>View of the sample collection of surface water at the Upstream location from the quarry.</i>	
<b>PHOTO #7</b>	

<b>Project:</b> 1131.003 <b>Date:</b> 2/27/03 <b>Photographed By:</b> <i>Hilary Janousek</i>	
<b>Description:</b> <i>View of the sample collection of surface water at the Outfall location of the quarry.</i>	
<b>PHOTO #8</b>	

## ATTACHMENT 7

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

### Five-Year Review Site Inspection Checklist (Template)

I. SITE INFORMATION	
Site name: <u>Republic Steel Quarry</u>	Date of inspection: <u>March 7, 2003</u>
Location and Region: <u>Lorain Co., Elyria, Ohio</u>	EPA ID: <u>OH D980903447</u>
Agency, office, or company leading the five-year review: <u>U.S. EPA</u>	Weather/temperature: <u>overcast Rainy, warm, 60-65°F</u>
<b>Remedy Includes: (Check all that apply)</b> <input type="checkbox"/> Landfill cover/containment <input checked="" type="checkbox"/> Access controls <input checked="" type="checkbox"/> Institutional controls <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input checked="" type="checkbox"/> Other <u>Soil excavation, groundwater monitoring as needed</u> <input type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls	
Attachments: <input type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached	
II. INTERVIEWS (Check all that apply)	
1. O&M site manager <u>City of Elyria, Craig Sampson</u> <u>Engineering Div.</u> <u>3-07-03</u> <div style="display: flex; justify-content: space-between;"> <span>Name</span> <span>Title</span> <span>Date</span> </div> Interviewed <input checked="" type="checkbox"/> at site <input checked="" type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. <u>440-322-5464</u> Problems, suggestions; <input checked="" type="checkbox"/> Report attached _____	
2. O&M staff <u>Eric Rothgery</u> <u>Safety Service Director</u> <u>3-07-03</u> <div style="display: flex; justify-content: space-between;"> <span>Name</span> <span>Title</span> <span>Date</span> </div> Interviewed <input type="checkbox"/> at site <input checked="" type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. <u>440-322-0926</u> Problems, suggestions; <input checked="" type="checkbox"/> Report attached _____	

2.	<b>Site-Specific Health and Safety Plan</b> <input type="checkbox"/> Contingency plan/emergency response plan	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
Remarks _____				
3.	<b>O&amp;M and OSHA Training Records</b> Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks _____				
4.	<b>Permits and Service Agreements</b> <input type="checkbox"/> Air discharge permit <input type="checkbox"/> Effluent discharge <input type="checkbox"/> Waste disposal, POTW <input type="checkbox"/> Other permits _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
Remarks _____				
5.	<b>Gas Generation Records</b> Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks _____				
6.	<b>Settlement Monument Records</b> Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks _____				
7.	<b>Groundwater Monitoring Records</b> Remarks <u>U.S.-EPA has these records also</u>	<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	N/A
Remarks _____				
8.	<b>Leachate Extraction Records</b> Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks _____				
9.	<b>Discharge Compliance Records</b> <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent)	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
Remarks _____				
10.	<b>Daily Access/Security Logs</b> Remarks <u>This information is currently not maintained by the City of Elyria. A recommendation was made to them to keep a record of this information</u>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
Remarks _____				
<b>IV. O&amp;M COSTS</b>				
1.	<b>O&amp;M Organization</b> <input type="checkbox"/> State in-house <input checked="" type="checkbox"/> PRP in-house <input type="checkbox"/> Federal Facility in-house <input type="checkbox"/> Other _____	<input type="checkbox"/> Contractor for State <input type="checkbox"/> Contractor for PRP <input type="checkbox"/> Contractor for Federal Facility		
Remarks _____				

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A  
 Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (e.g., self-reporting, drive by) PRP (City of Elyria) inspects force  
 Frequency Seasonally dependent. Inspected more frequently in summer  
 Responsible party/agency City of Elyria  
 Contact Craig Sampson Engineering Dept. 3-07-03 440-322-5464  
 Name Title Date Phone no.

Reporting is up-to-date ☐ Yes ☐ No ☒ N/A  
 Reports are verified by the lead agency ☐ Yes ☐ No ☒ N/A

Specific requirements in deed or decision documents have been met ☒ Yes ☐ No ☐ N/A  
 Violations have been reported ☐ Yes ☐ No ☒ N/A  
 Other problems or suggestions: ☐ Report attached  
No violations reported to date

2. **Adequacy** ☒ ICs are adequate ☐ ICs are inadequate ☐ N/A  
 Remarks \_\_\_\_\_

**D. General**

1. **Vandalism/trespassing** ☐ Location shown on site map ☐ No vandalism evident  
 Remarks Some trespassing on quarry property was evident

2. **Land use changes on site** ☒ N/A  
 Remarks None as per deed restrictions

3. **Land use changes off site** ☒ N/A  
 Remarks None evident.

**VI. GENERAL SITE CONDITIONS**

**A. Roads** ☒ Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map ☒ Roads adequate ☐ N/A  
 Remarks \_\_\_\_\_

**B. Other Site Conditions**

9.	<b>Slope Instability</b>	<input type="checkbox"/> Slides	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of slope instability
	Areal extent _____			
	Remarks _____			
<b>B. Benches</b>				
	<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A		
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)				
1.	<b>Flows Bypass Bench</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay	
	Remarks _____			
2.	<b>Bench Breached</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay	
	Remarks _____			
3.	<b>Bench Overtopped</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay	
	Remarks _____			
<b>C. Letdown Channels</b>				
	<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A		
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)				
1.	<b>Settlement</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of settlement	
	Areal extent _____ Depth _____			
	Remarks _____			
2.	<b>Material Degradation</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of degradation	
	Material type _____ Areal extent _____			
	Remarks _____			
3.	<b>Erosion</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of erosion	
	Areal extent _____ Depth _____			
	Remarks _____			
4.	<b>Undercutting</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of undercutting	
	Areal extent _____ Depth _____			
	Remarks _____			
5.	<b>Obstructions</b>	Type _____	<input type="checkbox"/> No obstructions	
	<input type="checkbox"/> Location shown on site map	Areal extent _____		
	Size _____			
	Remarks _____			

<b>F. Cover Drainage Layer</b>		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	<b>Outlet Pipes Inspected</b> Remarks _____	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A
2.	<b>Outlet Rock Inspected</b> Remarks _____	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A
<b>G. Detention/Sedimentation Ponds</b>		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	<b>Siltation</b> Areal extent _____ Depth _____ <input type="checkbox"/> Siltation not evident Remarks _____	<input type="checkbox"/> N/A	
2.	<b>Erosion</b> Areal extent _____ Depth _____ <input type="checkbox"/> Erosion not evident Remarks _____		
3.	<b>Outlet Works</b> Remarks _____	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A
4.	<b>Dam</b> Remarks _____	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A
<b>H. Retaining Walls</b>		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	<b>Deformations</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Deformation not evident Horizontal displacement _____ Vertical displacement _____ Rotational displacement _____ Remarks _____		
2.	<b>Degradation</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Degradation not evident Remarks _____		
<b>I. Perimeter Ditches/Off-Site Discharge</b>		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	<b>Siltation</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Siltation not evident Areal extent _____ Depth _____ Remarks _____		
2.	<b>Vegetative Growth</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A <input type="checkbox"/> Vegetation does not impede flow Areal extent _____ Type _____ Remarks _____		

3.	<b>Spare Parts and Equipment</b> <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks _____
<b>C. Treatment System</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A	
1.	<b>Treatment Train (Check components that apply)</b> <input type="checkbox"/> Metals removal <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Bioremediation <input type="checkbox"/> Air stripping <input type="checkbox"/> Carbon adsorbers <input type="checkbox"/> Filters <input type="checkbox"/> Additive (e.g., chelation agent, flocculent) _____ <input type="checkbox"/> Others _____ <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> Sampling ports properly marked and functional <input type="checkbox"/> Sampling/maintenance log displayed and up to date <input type="checkbox"/> Equipment properly identified <input type="checkbox"/> Quantity of groundwater treated annually _____ <input type="checkbox"/> Quantity of surface water treated annually _____ Remarks _____
2.	<b>Electrical Enclosures and Panels (properly rated and functional)</b> <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____
3.	<b>Tanks, Vaults, Storage Vessels</b> <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs Maintenance Remarks _____
4.	<b>Discharge Structure and Appurtenances</b> <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____
5.	<b>Treatment Building(s)</b> <input type="checkbox"/> N/A <input type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair <input type="checkbox"/> Chemicals and equipment properly stored Remarks _____
6.	<b>Monitoring Wells (pump and treatment remedy)</b> <input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input checked="" type="checkbox"/> All required wells located <input checked="" type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks <u>Well B-4 needs to be reassessed.</u>
<b>D. Monitoring Data</b>	
1.	<b>Monitoring Data</b> <input type="checkbox"/> Is routinely submitted on time <input type="checkbox"/> Is of acceptable quality
2.	<b>Monitoring data suggests:</b> <input type="checkbox"/> Groundwater plume is effectively contained <input checked="" type="checkbox"/> Contaminant concentrations are declining

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

No anticipation of remedy problems. The costs are fairly low and the remedy is simple.

**D. Opportunities for Optimization**

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Possible opportunities in monitoring would involve the cessation of unnecessary monitoring tasks performed by U.S.EPA and/or OEPA. Such tasks could include monitoring of the Black River sediment and fish, which are not impacted by Site, and monitoring of soils on-site. Reduced frequency of groundwater monitoring (as it is not used) and reduced frequency of quarry monitoring may also be possible. It may only be useful to sample fish tissue in the quarry as an indicator of contamination potentially moving from the Site.

However, only inorganics (metals) and possibly SVOCs would be necessary

fish tissue parameters.



## **ATTACHMENT 8**

### **Information Repository Document Inventory Elyria Public Library 320 Washington Avenue, Elyria, Ohio**

#### **Update # 1:**

Final RI Report for the RSQ Site, August 26, 1988  
Final Phase I RI Report, August 26, 1988  
Pleadings/Orders for challenging the NPL listing of the RSQ Site, September 27, 1988  
Revised Endangerment Assessment  
Proposed Plan for the RSQ Site, September 2, 1988  
Public Meeting transcripts and comments, September 15, 1988  
Record of Decision, September 30, 1988  
Action Memorandum for ceiling increase, September 19, 1989  
Site Assessment, August 1990  
On-Scene Coordinator's Report, April 24, 1992  
Action Memorandum for ceiling increase, April 27, 1992

#### **Update # 2:**

Settlement Document for past costs with the City of Elyria, September 15, 1995

#### **Update # 3:**

Five Year Review for the RSQ Site (May 30, 1998)  
Request letter from USEPA to OEPA for concurrence on Five-year review, June 19, 1998

#### **Update # 4:**

Quality Assurance Project Plan for the First Five-Year Review, January 28, 1997

#### **Update # 5:**

Explanation of Significant Differences (ESD), September 28, 2001  
USEPA cover letters to ESD, January 10, 2002  
OEPA letter of concurrence with ESD, October 1, 2001

#### **Update # 6:**

ESD Fact Sheet, August 1, 2002  
Notice of Deletion of the RSQ Site, September 12, 2002  
Notice of Intent to Delete the RSQ Site, September 12, 2002  
OEPA letter of concurrence with RSQ Site delisting, August 16, 2002  
Letter from USEPA to City of Elyria regarding institutional controls at the RSQ Site, June 13, 2002  
Response from City of Elyria to USEPA regarding institutional controls, July 25, 2002.